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ABSTRACT

This strategic technology plan for Virginia's public libraries presents current findings, recommendations, and the steps required to achieve universal access to electronic information. Introductory material includes lists of members of the Library of Virginia Board and Technology Plan Committee, an executive summary, and vision statement. The first section provides background on the national and state networking environment, including the Internet, Federal Telecommunications Act of 1996, Universal Service Fund, developments in the Commonwealth, the Virginia Library and Information Network, and the current status of public access via Virginia's public libraries. The second section summarizes recommendations related to infrastructure, content, acceptable Internet use policy, retrospective conversion of bibliographic records, and monitoring and evaluation. The third section presents three-year costs for the recommendations. Appendices include a survey of public and staff access to the Internet at Virginia public libraries, the 1998 Lynch report, a map of Virginia public libraries providing public access to the Internet, Internet costs, content costs, and Library of Virginia staff support costs. (MES)

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Infopowering the Commonwealth

Virginia's Public Libraries: Electronic Resource Libraries for 21st Century Information

A Strategic Technology Plan For Public Libraries to the Joint Commission on Science and Technology

November 1998

IR 019 897

Nelson Worley

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To: The Honorable James S. Gilmore, Governor of Virginia and Members of the General Assembly

House Joint Resolution No. 444 of the 1997 session requested that the Library of Virginia develop a strategic technology plan for the Commonwealth's public library system. The role of the public library is to provide information to our citizens in a democratic and equitable fashion. As online access to information is becoming the primary mode for information access, the goal of this legislation is to foster "universal access" to electronic information for all Virginia citizens. The attached technology plan presents current findings, recommendations, and the steps required to achieve "universal access."

I am pleased to present this strategic technology plan and must acknowledge those groups and individuals who assisted in producing this plan. On behalf of the Library Board, I thank those Board members who served on the Internet Access Committee, the public library directors and members of the Library of Virginia staff who served on the Technology Plan Committee, and members of the State Networking Advisory Board who assisted in the process.

This strategic technology plan was unanimously endorsed by the Library Board at its meeting on November 16, 1998.

Sincerely,

Roy E. Cabell, Jr.
Chairman, The Library Board

jct
Attachment

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Special thanks to
Mr. Lenwood G. Clark of the Library Board
for his detailed review of the plan, and for his comments and suggestions.

The Library Board
Internet Access Committee
Peter E. Broadbent, Jr.
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Sharon L. McCamy
Leona E. Wilkins

Infopowering the Commonwealth

Virginia's Public Libraries:
Electronic Resource Libraries for
21st Century Information

The Library of Virginia Board

Technology Plan Committee

Executive Summary

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Universal Service Fund
Developments in the Commonwealth
The Virginia Library and Information Network
Public Internet Access via Virginia's Public Libraries – Current Status

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Two:	**Content**
Three:	**Acceptable Internet Use Policy**
Four:	**Retrospective Conversion of Bibliographic Records**
Five:	**Monitoring and Evaluation**

Three Year Costs

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EXECUTIVE SUMMARY

Infopowering the Commonwealth

Virginia's Public Libraries:
Electronic Resource Libraries for 21st Century Information

VISION

Every individual in the Commonwealth of Virginia will have access to a public library that serves as an *Electronic Resource Library* for 21st Century Information.

CHALLENGE

The latest Library of Virginia survey of Internet availability in Virginia public libraries indicates that many public libraries, spurred on by local public demand, have implemented some public Internet access during the past year. However, not all issues and costs associated with providing adequate Internet access can be resolved at the local level.

Universal Access is defined as access to current, authoritative information in electronic format at the time of need for all Virginians. Such access demands a sufficient number of high speed computers with graphical interfaces in public libraries to ensure reasonable availability and adequate capability to access the World Wide Web. Effective Universal Access also means having well-trained library staff to act as coaches and navigators. Infrastructure, connectivity, content, and training costs heavily impact every public library system in the Commonwealth. No library has been able to implement a system that provides access and content equal to local demand.

RECOMMENDATIONS

Recommendation One: Infrastructure

The Commonwealth of Virginia will make the information superhighway accessible to all citizens of the Commonwealth through connections to the Internet at their local public library:

- Internet connectivity grants for all public libraries without Internet access or without adequate hardware to access the World Wide Web.
- ongoing connectivity subsidies to the World Wide Web for each library system.
- replacement grants for older computers and for additional stations.

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Recommendation Two: Content

The Commonwealth of Virginia will provide access to current and comprehensive electronic information for life-long learning and informed decision making through an *Electronic Resources Library* (ERL) hosted at the Library of Virginia utilizing extranet applications:

- creation of a homepage hosted at LVA to provide access to the ERL.
- an initial portfolio of databases that includes a periodical index with full-text access to more than 1000 titles, an encyclopedia, and children's material available in the ERL through public libraries and personal computers with WWW capability throughout the Commonwealth.
- links to selected authoritative Websites in major areas of interest to citizens, including state information, job information, health, business, and legal information.

Recommendation Three: Acceptable Internet Use Policies

The Commonwealth of Virginia will require all public libraries offering public Internet access to create, adopt, and file with the Library of Virginia an acceptable Internet use policy. The policy must contain provisions that prohibit use of a public library's computer equipment or online services to access obscene content (including child pornography) and which seek to prevent juvenile access to content harmful to minors. In conjunction with this oversight activity, the Library of Virginia will offer assistance and will advise in the development of Internet services, and will establish and maintain an *Electronic Resource Library*, a content-rich public library Internet Web site.

Recommendation Four: Retrospective Conversion of Bibliographic Records

The Commonwealth of Virginia will position all Virginia public libraries to share their bibliographic databases electronically:

- libraries without records in machine readable format will receive assistance to convert their bibliographic records.
- databases not currently in machine readable form and inaccurate databases will be addressed.

Recommendation Five: Monitoring and Evaluation

The Commonwealth of Virginia will continue to monitor the progress of public libraries in providing citizen access to the information superhighway:

- through annual reports from the Library of Virginia to appropriate agencies and commissions,
- through benchmarks and standards established nationally and locally to define effective universal access.
- through an evaluation of, and suggested additions or changes to, *Infopowering the Commonwealth* no later than the midpoint of year 3.

A number of important obligations will be met when we find a way to balance the following urgent, yet often competing, needs and interests: unrestricted access to information; the protection of juveniles; the regulatory role of the state; the preservation of local control over sensitive community matters.

Infopowering the Commonwealth **creates that balance and provides good public policy: an open, reliable, legal environment that respects local control; commands personal responsibility and parental responsibility for children; encourages Internet access, education, and innovation; and provides lower costs for all Virginians. The *Electronic Resource Library* (Recommendation 2), with its rich resources for all ages, complements and strengthens the acceptable use policy (Recommendation 3) to provide a positive alternative to state mandated filtering.**

The estimated cost of implementing *Infopowering the Commonwealth* over a three-year period is $ 17,345,120, an average of less than $ 6,000,000 per year. This amount includes 4 percent adjustment for the Library of Virginia for administrative support to deploy the plan. Included in administrative support is funding for 4 additional staff positions. To implement the plan, it will be necessary to increase the Library's Maximum Employment Level (MEL) accordingly.

VISION

Every individual in the Commonwealth of Virginia will have access to a public library that serves as an *Electronic Resource Library* for 21st century information.

An *Electronic Resource Library* uses computers and telecommunications technology, a full range of library resources, and the services of skilled library personnel to:

- create, assemble, evaluate, and use information.
- extend access to library services from homes, schools, work places, and other locations.
- facilitate access by people with disabilities and other special needs.
- go beyond the library's walls to obtain information and resources.

An *Electronic Resources Library* meets the ongoing library and information needs of education, government, business, and citizens regardless of age, background, or location.

INTRODUCTION

House Joint Resolution 444, adopted by the 1997 session of the General Assembly, requested that the Library of Virginia develop a five year strategic information technology plan for the Commonwealth's public library system and "identify how that system will contribute towards achieving the goal of 'universal access." The resolution recognizes a broad definition of universal access: "universal access is the long term public policy goal of making the information highway accessible to all citizens of the Commonwealth for no more than the cost of a local phone call." It also recognizes that "....achieving the goal of universal access to the information highway requires physical infrastructure like hardware (e.g. computers, servers, workstations, printers, and routers), software (e.g., Internet browser), user training and staff development, and funding for support and maintenance expenses..."

In November 1997, the Library of Virginia submitted an Interim Report on a strategic technology plan for public libraries. In the year since the Interim Report, the plan has been improved. Changes in the rapidly evolving telecommunications and political environments in Virginia have been examined and addressed. The formal Technology Plan, *Infopowering the Commonwealth*, is being presented to the Joint Commission on Technology and Science and the General Assembly at this time.

Infopowering the Commonwealth concludes that, in order to provide Universal Access for all Virginians to current authoritative information in electronic format, each public library must become an electronic resource library for its citizens. An electronic resource library is a virtual library; a library enhanced and transformed by the use of computers and telecommunications technology to provide graphical access to the Internet and electronic services for users.

The latest Library of Virginia survey of Internet availability in Virginia public libraries (Appendix 1) indicates that many public libraries, spurred on by local public demand, have implemented some public Internet access during the past year. However, not all issues and costs associated with providing adequate Internet access can be resolved at the local level.

Universal Access, defined as access to current, authoritative information in electronic format at the time of need for all Virginians, demands a sufficient number of high speed computers in public libraries to ensure reasonable availability and adequate capability to access the World Wide Web. Effective Universal Access also means having well-trained library staff to act as coaches and navigators. Infrastructure, connectivity, content, and training costs heavily impact every public library system in the Commonwealth. No library has been able to implement systems that provide content or access equal to local demand.

The need to provide state assistance to public libraries so that they can fulfill their mission to provide universal access is more urgent every day. In *Losing Ground Bit by Bit*, the

Benton Foundation notes:

> *. . . 80 percent of families making more than $100,000 have computers. By contrast, of those families making less than $30,000 a year, only 25 percent have computers. . . . of people with an undergraduate degree or higher, 53 percent or higher use the Web while only 19 percent of people with a high school education or less are Web users.*[1]

This assessment contrasts dramatically with what will be expected of individuals as they work and transact their day to day business in the year 2000:

> *By the year 2000, 60 percent of jobs will require skills with technology . . . 75 percent of all transactions between individuals and government including such services as delivery of food stamps, Social Security benefits, and Medicaid information will take place electronically. People without technology skills or access to electronic communications will be at a considerable disadvantage.*[2]

In a recent presentation to the Joint Commission on Technology and Science Advisory Committee on Internet Access, the Northern Virginia Technology Council charted the impact of the Internet on Virginia's economy:

> *In the last five years, employment in the IT-Internet-Telecom sectors has grown 30% to 142,000 jobs....that growth is accelerating, not slowing. By 2002, 185,000 Virginians will be employed in this information technology-Internet-telecommunications industry. Average wages will be $73,000. There will be more than 9,000 companies and the wages will total $14.5*[sic] *billion.*[3]

Further, in an Executive Order, *Creating the Office of the Secretary of Technology and Establishing a Blue Ribbon Commission, The Governor's Commission on Information Technology*, Governor Gilmore stated:

> *Never in history has a single industry brought more change in less time than has the information technology industry. It is affecting everyone, everywhere, every day...Virginia government needs to ensure that its policies, education infrastructure, and use of technology encourage growth of the Commonwealth's technology base...The Commission shall advise the governor on development of the state's information technology infrastructure to facilitate state-of-the art communications*

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[1] Goslee, Susan. *Losing Ground Bit by Bit: Low Income Communities in the Information Age*. Benton Foundation, 1998. p. 3.

[2] Ibid. p. 4.

[3] Koelemay, Douglas. *Internet First*. Presentation to JCOTS 9/22/98.

capabilities by and among state and local governments, libraries and universities.[4]

In its assessment, the Benton Foundation concludes:

> *Traditionally, we have looked to schools and libraries to help eliminate disparities in access to information resources. Unfortunately, through no fault of their own, many of these institutions mirror the technology gap rather than mitigate it.*[5]

Providing universal and equal access for all Virginians to information resources is the driving principle of *Infopowering the Commonwealth*. In the year 2000 this information must include information in electronic formats. A free flow of information, increasingly provided electronically, is vital to the functioning of a free society and for Virginians to be competitive in the work place.

In providing equal access to information, public libraries in the Commonwealth and library trustees accept the responsibility of addressing the needs of children and young adults and enforcing the legal restrictions of the Virginia code (§ 18.2-374.1:1 child pornography; § 18.2-372 - § 18.2-374 obscene materials or § 18.2-377 obscene materials). Over 93 percent of the public libraries in Virginia offering public Internet access have adopted Acceptable Internet Use Policies which not only reflect the Code on content, but also meet local needs. Twenty-one libraries do not offer public Internet access, and consequently do not have Acceptable Internet Use Policies. The Acceptable Internet Use Policies are developed locally to meet local needs, and according to current indications are working. Most libraries report that the biggest complaint from the public is that there are not enough workstations. Many libraries include Internet access in their patron behavior policies that guide working with any library service-related issues. These policies are strengthened in *Infopowering the Commonwealth* by access to the *Electronic Resource Library*, a homepage hosted at LVA that can become a local library access point and service. The *ERL* provides authoritative full text electronic information and links to well documented, authoritative websites.

Infopowering the Commonwealth provides good public policy: an open, reliable, legal environment that encourages access, education, innovation and lower costs for all Virginians. *Infopowering the Commonwealth* will also enable public libraries in Virginia to become institutions of the future:

> *. . . the library of the future [will be] a hybrid institution that contains both digital and book collections . . . it will be the librarian navigator who will guide library users to the most useful sources, unlocking the knowledge and information contained in the vast annals of the information superhighway.*[6]

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[4] Gilmore, James. Executive Order Number Nine (98): *Creating the Office of the Secretary of Technology*. May 21, 1998.

[5] Goslee. Op.cit. p. 7.

[6] Benton Foundation. *Buildings, Books, and Bytes: Libraries and Communities in the*

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Through this plan Virginia's public libraries can assist in closing the technological gap that urgently confronts society. Without assistance now, public libraries will continue to mirror the gap and not fully assist in mitigating it.

It is critical that technology funding is an ongoing element of the operating expenses of the Commonwealth. Technology-based library services are an additional information service demanded and greatly needed by library users. Electronic Resource Libraries will supplement but will not replace traditional print and audiovisual library collections. All information needs of Virginia citizens are important.

Infopowering the Commonwealth has been a collaborative effort of the Library of Virginia staff and representatives from the public library community. Others have contributed significant insights and information: Diane Horvath and John Jung from the Joint Commission on Technology and Science attended meetings and provided background materials. Alison Paige Landry, Assistant Attorney General, provided background legal material and counsel. Dr. Clifford Lynch, Director of the Coalition for Networked Information (CNI), participated in discussions and made recommendations on drafts of *Infopowering the Commonwealth*, particularly costs and technological feasibility, as part of a study on Library of Virginia technology. This study is a follow-up to Dr. Lynch's 1994 study and is included in Appendix 2.

Digital Age. 1996. p. 4.

NATIONAL AND STATE NETWORKING ENVIRONMENT
- BACKGROUND -

The Internet

The Internet originated in the United States in 1969 as part of the research work of the United States Department of Defense, but it gradually became an international network. Initially, the Internet was used by technical experts and researchers, but in the late 1980s increased availability through a variety of online service providers increased network access to everyday computer users. The trend to increased citizen access to and use of the Internet has continued, and was reinforced by several Federal legislative initiatives beginning in 1991.

The passage of the High Performance Computing Act in 1991 provided focus for networking activities through the authorization of the National Research and Education Network (NREN). In 1993, the introduction of the National Information Infrastructure (NII) provided plans for implementation of the NREN. The NII, with expanded Internet, or the information superhighway, as a key component, plays a major role in the economic, educational, and societal development of the United States. The vision of the NII was later expanded to be a part of the Global Information Infrastructure (GII) to include all countries.

Federal Telecommunications Act of 1996

The Federal Telecommunications Act of 1996, a direct outgrowth of the NII initiative, includes as one of its major elements the expansion of the concept of universal service. As a result of this Act, universal service now includes access by all Americans, not only to telephones, but also to advanced communications and information services. Recent figures provided by the U. S. Department of Commerce shows that only about 20 percent of American households are connected to the Internet. The Telecommunications Act of 1996 addresses the need to expand access through an amendment that will help to achieve the goal of connecting all libraries to the Internet by the year 2000, thus making the Internet available to all citizens through libraries.

Universal Service Fund

The Schools and Libraries Universal Service Program was established as part of the Telecommunications Act of 1996 with the express purpose of providing affordable access to telecommunications services for all eligible schools and libraries, particularly those in rural and inner-city areas. The objective of the program is to provide discounts from 20 percent up to 90 percent on telecommunications services, Internet access, and internal connections.

Funding for the universal service discounts comes from the telecommunications industry.

in an Information Age update to the time-honored concept of universal service. The level of discounts schools and libraries are eligible to receive depends on economic need and location, rural, urban, and suburban; once approved, they apply their discounts to telecommunications services, Internet access and internal connections, then pay the difference out of their own budgets.

Universal service discounts (E-Rate) have not yet been awarded for 1998. Current information indicates that discounts will be announced in October 1998. December is the start date for applications for the 1999-2000 discount cycle.

The universal service program has been subject to intense debate, both in Congress and at the Federal Communications Commission. Changes in the scope, guidelines, and procedures for the program have been ongoing. More changes are expected in 1999. While the changes in the program have been extremely frustrating for the Virginia public library community, more than 200 Form 470's were filed. Subsequently, Virginia public libraries submitted Form 471's totaling more than $2.5 million. If the discounts are deployed, the discounts in 1998 for Virginia public libraries will be approximately $1.5 million. The future of the universal service program is, however, uncertain. Technological planning based solely on universal service discounts is very tentative. However, once the discounts are available, they will provide the opportunity for the local library to leverage the funding provided by the Commonwealth through *Infopowering the Commonwealth*.

Developments in the Commonwealth

The states which have demonstrated the greatest success in providing electronic access to citizens are those which have a coordinated statewide telecommunications strategy shared by schools, public libraries, colleges and universities, and state and local government. These successful states include Georgia, North Carolina, and Ohio.

The development of a telecommunications strategy in Virginia has not followed the pattern of these states. While there has been some cooperation among academic institutions, public schools, and the Library of Virginia, acting on behalf of the public libraries, there has been duplication of effort as these entities have sought to provide access for users. The Library of Virginia and the Department of Education have expended numerous staff hours to ensure local access to the Virginia Library and Information Network (VLIN) and the Virginia Public Education Network (VA.PEN). Often efforts have been directed to similar connectivity issues.

The recent development of NET.WORK.VIRGINIA, and collaborative efforts of the Department of Information Technology (DIT) and Virginia Tech, does offer an advanced, broadband network delivering asynchronous transfer mode (ATM) services statewide. While NET.WORK.VIRGINIA does offer high performance with a level statewide pricing structure, both the bandwidth capacity, and consequently the cost thereof, are much beyond the needs and the means of local public libraries. A number of public libraries, even

with the possibility of Universal Service Fund discounts, have opted not to pursue NET.WORK.VIRGINIA contracts because of the high cost and excessive bandwidth.

A single, scalable, statewide information strategy is beyond the scope of this report. The existence of such an strategy would meet the telecommunications needs of schools, public libraries, and other agencies. It would eliminate duplication of efforts and provide greater effectiveness and efficiency. A well-developed and well-maintained information infrastructure would ensure that the level of quality of the electronic information services will be the same for users in a small library in rural Virginia as it is for users in a large library in an urban setting. The Library of Virginia can play a major role in supporting the development of this infrastructure for public libraries in the future.

The Virginia Library and Information Network

Implementation of VLIN began during the summer of 1992. Working with the Virginia Education and Research Network (VERnet), the Library of Virginia, in partnership with VA.PEN, established local-dial access throughout the state. Toll-free access was provided for libraries without local-dial capability.

At the end of 1993, more than half of the public libraries had access to VLIN. All Virginia public library staff members had VLIN access to the Internet by the end of 1994. Access was also made available to other types of libraries, including institution, special, state agency, and others. Currently, there are more than 2,000 connected library staff users at more than 500 library locations.

VLIN continues to be available only to library staff. It also remains a text-based application. For VLIN to be a more effective resource tool, it should be made available directly to the public, and it should become a graphical application.

Moreover, the need for graphical interface and direct public access is further illustrated by the growth of the World Wide Web and the digitization of library collections. The Library of Virginia has actively developed both a Web presence and has completed the digitization of more than 2.2 million original documents, photographs, and maps with appropriate finding aids.

Both the Web and digitization of collections have increased the wealth of information available electronically. Web browsers have simplified usage for even the technological neophyte. However, accessing the Web and digital collections does require up-to-date equipment and levels of connectivity that are not currently available at all the Commonwealth's public libraries.

Public Internet Access via Virginia's Public Libraries – Current Status

As it has the two previous years, the Library of Virginia conducted a survey of public libraries concerning public Internet access. Because of the increased importance of other

issues relative to Internet access, (i. e., impact of the E-Rate, acceptable use, etc.) this year's survey was more extensive than those conducted previously. The complete survey with results is included in Appendix 1.

While this year's survey indicates more widespread progress in providing public Internet access, the provision of this service across the Commonwealth continues to lack depth. No library has been able to implement a system that provides access and content equal to local demand.

Last year, there were 348 public Internet access computers available in public libraries; this year, there are approximately 600, or one computer for every 11,200 citizens of the 90 public library systems:

- 32 systems have public Internet access at the central library and all branches
- 20 additional libraries, which do not have branches, have public Internet access.
- 5 systems have public Internet access at the central library, but no access at any branches;
- 12 systems report public Internet access at some branches;
- 188 library outlets (out of a total of 386 public library locations or outlets in Virginia) do not offer public Internet access. This includes 38 bookmobiles, 23 stations (locations that will become branches), and 6 law libraries (only those operated by the public libraries).

The map included in Appendix 3 illustrates localities which provide public Internet access, localities which are planning to provide access in the next twelve months, and localities which do not offer public Internet access.

An additional concern that must be addressed is that more than 60 percent of public Internet access computers currently in use are older machines (i. e., not Pentiums). A similar percentage of staff computers in public libraries are also older and not able to handle a graphical interface. Applications and content available on the World Wide Web and in digital formats are graphical and increasingly technologically sophisticated. The older computers, such as those that provide access today in many public libraries, do not meet users' needs today and will need to be replaced soon. Subsequent plans for providing access to electronic resources, and the financial support of the Commonwealth to maintain this access, must address computer technology obsolescence.

RECOMMENDATIONS

Recommendation One: Infrastructure

The Commonwealth of Virginia will make the information superhighway accessible to all citizens of the Commonwealth through connections to the Internet at their local public library:

- **Internet connectivity grants for all public libraries without Internet access or without adequate hardware to access the World Wide Web.**
- **ongoing connectivity subsidies to the World Wide Web for each library system.**
- **replacement grants for older computers and for additional stations.**

Background

Virginia lacks a single statewide infrastructure to facilitate connectivity of public libraries. The telecommunications organization of the state contains seven Local Access Transport Areas (LATA) and several Independent Marketing Areas (IMA). In the early years of VLIN, the Library of Virginia played a major role in providing connectivity to the network, arranging for and bearing the cost of local and toll-free dial-up to the network.

Dr. Clifford Lynch, Director of the Coalition for Networked Information, who has twice served as a consultant for the Library, strongly recommends (Appendix 2) that the Library of Virginia's primary role be the development of network content, not local connectivity. A basic operating principle that evolves from Dr. Lynch's findings is that, in terms of local library connectivity, the Library of Virginia will deal with connectivity issues as a "broker of last resort" for those public libraries that have no other Internet connectivity options.

The continued development of the telecommunications marketplace in Virginia does provide local libraries with local connectivity options. Increasingly more libraries are contracting with local Internet Service Providers (ISP's) for service. As this trend continues, the Library of Virginia's role will be to give local public libraries advice and counsel on technology and to develop network content.

Importance

The challenge for the local libraries that seek to provide new public Internet access is securing funding for hardware, software, installation, and training. Once the service is in place, ongoing telecommunications costs for public Internet access, upgrades to hardware, and additional access points continue to challenge local resources.

The Virginia Library Association (VLA), in cooperation with the Virginia Educational Media Association (VEMA), held a joint conference October 15-17, 1998 in Virginia Beach. The

conference theme, "From Gutenberg to Gigabytes," illustrates the quandary many librarians face. While attempting to meet users' requests for access to new electronic technologies, libraries are faced with continued and increasing demands for print materials. VLA president Tom Hehman defined the situation most eloquently, "We're trying to deal with the technological revolution while we still have to respond to the Gutenberg revolution."

A commitment by the Commonwealth to provide universal access to the information superhighway must include a commitment of new funding to support technology. Seventy-eight percent of current state aid grants are used primarily for traditional library services still in demand and for the purchase of books and related materials. Libraries cannot easily shift funds from needed print materials to offer needed electronic resources. The amount of money is simply not large enough to meet both demands.

Implementation

Strategy One: Start Up Grants

Cost: $1,328,000 in year one (one time)

The Commonwealth of Virginia provides start-up grants to create Internet capacity for the 188 public library outlets in the Commonwealth that do not presently have public Internet access and for those libraries without adequate hardware to access the World Wide Web. Basic service for effective universal access is an ability to access the World Wide Web using a graphical browser and a minimum connection of 28.8Kbps. Start-up grants, not to exceed $ 8,000, will be used to purchase computer workstations (with assistive technology as needed) and including furniture: wiring, modem or other physical Internet connection; software including browser; virus protection and security; technical support to configure the workstation; and maintenance. Other needs will be considered on a case by case basis, but changes to buildings or facilities will not be funded in this plan.

Local libraries will apply for start-up grants through the Library of Virginia. Amounts of the grants will be based on actual need. This strategy may require less funds in year one if lower costs, less need, or local delays are encountered. If so, the remaining funding will be used to begin the replacement plan detailed in strategy three of this recommendation (Replacement and Additional Computer Grants). This shift of funds would result in the following outcome: a lower funding request for strategy three (Replacement and Additional Computer Grants) in year two or the use of strategy three funds to complete strategy one (Start up Grants) in year two when local delays have been overcome.

A 1995 study sponsored by the National Commission on Libraries and Information Science (NCLIS) concurred with conclusions reached in New York State's "Project Gain" initiative. Researchers determined that a "reasonable" start-up cost for a rural library was $8,000 to $10,000. Information about standard hardware/software configurations and costs are included in Appendix 4. In this plan, the lesser amount is used because the NCLIS model includes hardware that may not be needed to support Internet access in the Virginia plan.

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Configuration information and costs for any assistive technology are not included in the model.

Strategy Two: Ongoing Connectivity Subsidies

Cost: $900,000 in year one.
$900,000 in year two.
$900,000 in year three.

The Commonwealth of Virginia provides on-going connectivity subsidies of up to $10,000 per year per library system. Local library systems will use subsidy funds to provide appropriate connectivity, through dial-up or leased line services, to the Internet at each library in the system. These subsidies are not expected to cover the total Internet connection costs of many mid-size and larger systems. The minimum level of an acceptable connection needed for library staff and users to access and/or download content will be 28.8Kbps. The Library of Virginia will monitor the subsidy process to determine that local library systems have appropriate, cost-effective Internet connections. The amount of the subsidies will be based on actual telecommunications costs.

Strategy Three: Replacement and Additional Computer Grants

Cost: $2,000,000 in year two.
$2,000,000 in year three.

In years two and three of the plan, the Commonwealth of Virginia provides grants to replace the approximately 400 older computers and add 1,400 new public Internet access computers in libraries. In addition to providing funds for basic public Internet workstations, funds may also be used to purchase assistive technology for the workstations. At the end of year three, a minimum of 2,400 public Internet access computers will be available in public libraries.

Standards for how many Internet access points are needed in urban, suburban, and rural areas for effective universal access may be different. Indeed, public Internet access points may need to be higher in rural areas. National data is just beginning to emerge. One access point for 2000 citizens is based on data collected in Kansas, the only currently published standard, and consultation with Dr. Clifford Lynch, consultant to this planning process. The Library of Virginia will monitor development of standards nationally and will work with local public libraries to develop Virginia standards over time. Plans will be modified as standards are developed. The goal or target at present is 2400 public Internet workstations in public libraries that access the world wide web by 2002 for an overall state ratio of one access station for every 3125 Virginians.

Recommendation Two: Content

The Commonwealth of Virginia will provide access to current and authoritative electronic information for life-long learning and informed decision making through an *Electronic Resources Library* (ERL) hosted at the Library of Virginia utilizing extranet applications:

- **creation of a homepage hosted at VLA to provide access to the ERL.**
- **an initial portfolio of databases that includes a periodical index with full text access to more than 1000 titles, an encyclopedia, and children's material available in the ERL through Public Libraries and personal computers with WWW capability throughout the Commonwealth.**
- **links to selected authoritative websites in major areas of interest to citizens including state information, job information, health, business, and legal information. State information will be provided through the Virginia Information Providers Network (VIPnet).**

Background

Since 1994 the Library of Virginia through VLIN has offered access for *public library staff only* to selected online, text only, databases including the LVA's online catalog and a few commercial electronic databases. This access was provided as a first step into the electronic information age for public libraries by LVA in its role of providing guidance and assistance to the development of public library service across the Commonwealth.

WEAKNESSES OF CURRENT SERVICE	OPPORTUNITIES IN 2000+
• Does not provide universal access. • Does not serve the public directly. Librarian must access. • Does not support graphical format. Text-based only. • Does not support remote access from home or business. • Does not support Internet access for the public. • Format hard to access even by experienced staff. • Many public libraries, because of public demand, must license full text databases for local patron direct use. • Local licensing is extremely expensive. One locality spends $.43/capita for local licensing which could be provided statewide at $.19/ capita.	• Universal access in public libraries implies direct patron access to electronic information and is desired by most citizens. • Patrons seek help and guidance in choosing in and navigating in the WWW and in selecting appropriate sites that meet their needs. • Direct patron access is essential in busy libraries where staff are limited. • Remote access is necessary for cost-effective provision of electronic information and to meet business and student demands. • Graphical user interface (GUI) to the WWW is widely available and considered by the public the state of the art interface. • Increasingly electronic information requires a GUI for full access. • Many commercial full text information packages are available. Competitive bidding for statewide license can be cost-effective.

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Importance

The Internet has created access to more information than the world has ever known – some commercial, some illegal, some of uncertain validity and value, some very informative, and some truly astounding. The traditional means of information collection, dissemination, and retrieval through libraries for citizen use no longer can be as easily applied when everything seems to be available "out there" electronically for anyone to find. Individuals often feel lost when left to find and evaluate information themselves – and for many this is a major barrier to an increasingly important resource.

The creation of the *Electronic Resource Library*, a virtual public library at the Library of Virginia in which local public libraries will participate, continues the traditional role of LVA begun with VLIN and moves to the next generation of service:

- A rich content *Electronic Resources Library*, with graphical interface and with user-friendly navigation tools, provides a one stop Internet address which will meet most citizen's needs for comprehensive, current, authoritative electronic information: periodical indexing and full text materials, materials for children, and a general use encyclopedia, direct links to librarian-selected Internet Web sites. With minimal initial guidance, patrons can begin to move within and among information sources in the *Electronic Resource Library*.
- While universal access is equated in the public's mind with direct patron access to the Internet, the Library views universal access not simply as access to the Internet and WWW, but access for all Virginians through their public libraries to current authoritative electronic information. The *Electronic Resource Library* in conjunction with local connectivity grants (Recommendation 1) will bring the Commonwealth close to that goal.
- The economic barrier for public libraries brought about by the prohibitive costs of local licensing of commercial databases which are essential to authoritative electronic information delivery would be removed by state licensing of selected databases.
- The *Electronic Resource Library*, with its rich resources for all ages, complements and strengthens the Acceptable Internet Use Policy (Recommendation 3) to provide a positive alternative to state mandated filtering.

Public Libraries will cooperatively select electronic materials that complement print collections to meet citizen information needs. This selection process is the essence of librarianship. The cooperative building of a carefully constructed, broad collection of the most useful and authoritative electronic information resources will be of benefit to all of the citizens of the Commonwealth. Many citizens may not need to venture beyond this resource to find information for lifelong learning or informed decision making. Content developed exclusively for children will allow significant access to substantial amounts of educational and recreational material, while excluding sites which fall outside the selection criteria. The *Electronic Resource*

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Library will become for local libraries and citizens their *Electronic Resource Library* with attractive search choices and information retrieval options.

Implementation Plan

Strategy One: Creation, Development and Maintenance of the Homepage

Cost: $50,000 (annual)

Home Page format is created by LVA. Infrastructure to support the page and *Electronic Resource Library* is also developed by LVA. The homepage would continue to be developed and maintained at LVA to meet changing citizen needs.

Strategy Two: Content of the Electronic Resource Library.

Cost: $2,000,000 for database licenses (year one)
$ 500,000 for training (annually for years one and two)
$2,500,000 for database licenses (annually for years two and three)
$ 250,000 for training (year three)

Assumptions and details about costs included in Appendix 5.

- Competitive bidding of commercial databases (periodical index with full text of more than 1000 titles, encyclopedia, children's reference database) based on criteria established by public library directors and LVA staff. (year one)
- Selection of strong Internet sites that meet the information needs of the citizens evaluated for currency and accuracy. Shared responsibility of Virginia Public Libraries under the direction of LVA. (year two)
- The Library of Virginia will work cooperatively with the academic community and its Virtual Library of Virginia (VIVA) to secure cost-effective licensing of databases and to promote resource sharing. (ongoing)
- Public Library catalogs made available through electronic files on the Home Page either through Z39.50 protocol or HTML search engine. Responsibility of LVA. (year three)
- LVA unique materials from the digital project included on the Home Page. Responsibility of LVA. (year two)
- Training components of the plan available for library staff and citizens statewide. A qualified consulting firm will be retained to develop and deploy appropriate training modules.

Strategy Three: Governance Structure

Cost: administrative overhead only.

Governance structure will be based on partnership of LVA and the Virginia Public Library Directors. This Advisory Committee, with representation from the public libraries and LVA, will be responsible for oversight, development, budget recommendations, and evaluation.

Recommendation Three: Acceptable Internet Use Policies

The Commonwealth of Virginia will require all public libraries offering public Internet access to create, adopt, and file with the Library of Virginia an acceptable Internet use policy. The policy must contain provisions that prohibit use of a public library's computer equipment or online services to access obscene content (including child pornography) and which seek to prevent juvenile access to content harmful to minors. In conjunction with this oversight activity, the Library of Virginia will offer assistance and will advise in the development of Internet services, and will establish and maintain an *Electronic Resource Library*, a content-rich public library Internet Web site.

Background

Specific concerns have been raised in Virginia and elsewhere regarding potential access to pornographic and obscene materials through Internet access provided by the public library. Of particular concern are juveniles. While concern about these types of materials, and their availability, is understandable, state policies must take care to preserve and support long established fundamental principles while attempting to grapple with the changes brought about by new technology.

Fundamental Principles of Public Library Service in the Commonwealth	Current Reality of Internet Access in Public Libraries in Commonwealth
• Individuals should be held accountable for their actions. • Parents have the ultimate responsibility for deciding what their children read and what library services they receive.	• 90% (62 of 69) of the public libraries in the Commonwealth offering public Internet have an approved acceptable use policy in place. 21 libraries do not offer public Internet and have no policies.

Fundamental Principles of Public Library Service in the Commonwealth	Current Reality of Internet Access in Public Libraries in Commonwealth
• The mission of the public library is to provide information, as broadly and as completely as possible, to as many citizens as it can. In the age of the Internet, this mission includes universal access to electronic information. • LVA provides local public libraries with advice and assistance, and broad guidelines designed to promote effective delivery of standard library services to the citizens of the state. • Local libraries, their boards and governing authorities gauge and measure local needs and devise and implement the strategies, operations, and procedures which can best serve local citizens. • Obscenity and child pornography are illegal in Virginia and have no place in public libraries. • There is material on the Internet which is harmful to minors, and protection of minors is a compelling government interest.	• The policies are as diverse as the communities and situations, which generated them. • Technological safeguards in the form of filtering and blocking software are not perfect but are one means of protecting children from harmful content and avoiding the display of obscene content. • Filtering and blocking software fail to block some of the undesirable sites. They may inadvertently block numerous legitimate sites. Use of filtering and blocking software must be accompanied by the ability to readily unblock legitimate sites on request.

Importance

Though broad access to information is a fundamental principle of public libraries, public libraries are also sensitive to the needs of juveniles and the justifiable concerns of their parents. Libraries do not wish to operate in an environment where there is either a real or perceived threat to the safety and well being of juveniles. However, one of the greatest tragedies would be if large numbers of children were prevented from fully using the resources of their public libraries because of fears related to exposure to harmful materials. The tragedy would only be compounded if most of these fears were based on unrealistic assessments of the likelihood of exposure to such materials or a perception that there is no control or credible alternative to totally restricted access.

A number of important obligations will be met when we find a way to balance the following competing needs and interests: unrestricted access to information; the protection of juveniles; the regulatory role of the state; the preservation of local control over sensitive community matters. *Infopowering the Commonwealth* creates that balance and provides good public policy, an open, reliable, legal environment that encourages access, education, innovation, and lower costs for all Virginians

Implementation

Strategy One: Acceptable Internet Use Policies

Cost: The Library of Virginia budget provides for consultants and advisors on a broad range of policy development for public libraries and maintenance of public policy files. Funds to provide additional services, 4 percent per year, are included in this plan in the administrative fee (Appendix 6). The Library of Virginia's Maximum Employment Level (MEL) will need to be adjusted to provide an additional 4 positions to support the development and operation of the Electronic Resource Library. Funds for these positions will come in part from the 4 percent administrative support.

All public libraries offering public Internet access must draft and adopt acceptable Internet use policies, which must include provisions related to the needs of juveniles and the legal restrictions of the Virginia code (§ 18.2-374.1:1 child pornography; § 18.2-372 - § 18.2-374 obscene materials or § 18.2-377 obscene materials). Locally approved policies must be in place before funding is provided through this plan. Local policies submitted before 1998 must be reviewed for currency. (year one)

These policies will be reviewed by the Library of Virginia and placed in the public policy files maintained by the Library Development and Networking Division. All acceptable Internet use policies will be available both online and in print. In some cases summaries will be provided to encourage review by citizens. Such summaries would refer to the detailed policy statement and contain directions for locating the full policy.

Elements of a standard acceptable use policy should include:

- A guiding mission/concept/approach statement, which may include a description or summarization of the Internet and its general nature, including reference to the broad range and diversity of content.
- A statement regarding illegal and inappropriate behaviors and issues, prohibiting display or possession of obscene content (including child pornography) and seeking to prevent juveniles from exposure to content harmful to minors. This may include the citation of the relevant portions of the Code of Virginia (e.g., 18.2-374 et seq., 18.2-374.1 et seq., and 18.390 et seq.) or federal laws.
- A listing of any prohibitions or regulations of behaviors, such as attempts to violate security systems or to enter operating systems, use of personal disks, loading additional software, etc.
- A description of any additional local limits, such as the lack of availability of email or chat capabilities; reference to any network, browser, default search engine; or any similar arrangements which present some type of inherent limit. The presence of filtering or blocking software should be explicitly identified, and the availability of remedies and assistance in dealing with them should be stated with clarity.

- A clear outline of the conditions governing use, such as time limits at access stations, required registration, explanations of relevant procedures and practices, etc.
- A list of options, if available, such as locally mounted databases, bookmarked sites or local navigational and search guides, the *Electronic Resource Library*, specifically designed local Web pages for children and other populations, etc.
- Directions for additional information and/or assistance.
- An acknowledgement by the patron that he/she has read and will abide by the acceptable Internet use policy.

Strategy Two: Speedy implementation of the Electronic Resource Library.

Cost: contained in recommendation two

The *Electronic Resource Library* hosted at the Library of Virginia as outlined in Recommendation 2 would be fully implemented as promptly as possible so that the benefits of this new resource can be realized quickly. The primary goals of the *Electronic Resource Library* are to provide quality assurance, a more easily negotiable research environment and a reliable "first stop" option for citizens. A component developed exclusively for children will allow significant access to substantial amounts of educational and recreational material, while excluding sites that fall outside the selection criteria.

***Infopowering the Commonwealth* with the Acceptable Internet Use Policy and with the *Electronic Resources Library* with training for staff and the public provides quality assurance in electronic information and good public policy: an open, reliable, legal environment that respects local control, commands personal responsibility and parental responsibility for children, encourages Internet access, education, innovation and provides lower costs for all Virginians.**

Recommendation Four: Retrospective Conversion of Bibliographic Records

The Commonwealth of Virginia will position all Virginia public libraries to share their bibliographic databases electronically:

- **libraries without records in machine readable format will receive assistance to convert their bibliographic records.**
- **databases not currently in machine readable form and inaccurate databases will be addressed.**

Background

The Library of Virginia is currently working with 18 libraries to convert bibliographic records to machine readable (MARC) format. Four libraries have completed the retrospective conversion, four others are in process. Five systems are preparing to begin; five other library

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systems have yet to convert records to MARC format. In addition, a number of libraries have not maintained up-to-date databases and/or have databases that are inaccurate.

Importance

For all public libraries to share resources, bibliographic records must be in electronic format.

Implementation

Strategy: Retrospective Conversion

Cost: $250,000 (total)

Last year the Library of Virginia contracted with the Electronic Scriptorium to complete retrospective conversion of these libraries. The Library will work with these libraries and provide retrospective conversion grants as needed to complete this process.

Recommendation Five: Monitoring and Evaluation

The Commonwealth of Virginia will continue to monitor the progress of public libraries in providing citizen access to the information superhighway:

- **through annual reports from the Library of Virginia to appropriate agencies and commissions.**
- **through benchmarks and standards established nationally and locally to define effective universal access.**
- **through an evaluation of, and suggested additions or changes to, *Infopowering the Commonwealth* no later than the midpoint of year 3.**

Costs: *Existing LVA budget and administrative support funds included in the plan. Staffing costs are included in Appendix 6.*

"Infopowering the Commonwealth"

Three Year Costs

	1999-2000	2000-2001	2001-2002
REC. 1: INFRASTRUCTURE			
START-UP GRANTS	$1,328,000		
CONNECTIVITY SUBSIDIES	$ 900,000	$ 900,000	$ 900,000
UPGRADE GRANTS		$2,000,000	$2,000,000
REC. 2: ELECTRONIC INFORMATION			
HOME PAGE DEV./MAINT.	$ 50,000	$ 50,000	$ 50,000
LICENSING	$2,000,000	$2,500,000	$2,500,000
TRAINING	$ 500,000	$ 500,000	$ 250,000
GOVERNANCE	--	--	--
REC. 3: AIU POLICY	–	–	–
REC. 4: LOCAL DATABASE CONVERSION	$ 250,000	-	-
REC. 5: MONITORING/EVALUATION	–	–	–
LVA ADMINISTRATIVE SUPPORT (4 PERCENT)	$ 201,120	$ 238,000	$ 228,000
TOTAL	**$5,229,120**	**$6,188,000**	**$5,928,000**
		GRAND TOTAL	**$ 17,345,120**

NOTES

Recommendation 1: Start-up = Up to $ 8,000 per library outlet not currently offering, or without definite local plans, to offer public Internet access, for hardware or local area connectivity. (Approximately 166 of 188 outlets) Dollars not expended in year one (facility delays etc) would be used to fund Upgrade Grants in year one instead of two.
Connectivity = $10,000 per library system annually for Internet connection.
Upgrade grants = dollars for local equipment upgrades and additional computers.

Recommendation 2: Site development/maintenance = design and upkeep of the Electronic Resource Library. Licensing = state licensing of full text periodical database, encyclopedia and material for children. Training = statewide training of librarians to use the material and to assist the public in gaining skills.

Recommendation 4: Conversion of local databases (where needed) to electronic format.

Appendix 1

Survey of Public and Staff Access to the Internet in Virginia Public Libraries

Executive Summary
Survey of Public and Staff Access to the Internet in Virginia Public Libraries

Internet Connectivity

Is your library currently connected to the Internet through a provider other than VLIN?

Staff Only	9
Staff and Public Access	64
Public Access Only	5
None	12

Is your connection through dial-up using a modem and telecommunications software?

Modem/Telecom	78

Please indicate the nature of your dial-up connection.

Terminal Access	0
Internet Gateway	30
SLIP	10
Other	8

What is the fastest dial-up speed of this modem connection?

28,800 baud	13
33,600 baud	20
56K	13
Other	2

If you are using a leased line, what is the fastest speed of this connection?

56K	10
T1	18
T3	0
Other	8

*Data collected July 10 - 24, 1998.

If your library's access to the Internet is only through VLIN, do you plan to obtain a local connection to the Internet in the next 12 months?

Staff Only	3
Staff and Public Access	8
Public Only	1
None	2

Please indicated the type of connection that you are planning.

Dial up	9
Leased line	3

Which of the following Internet tools does your library offer library patrons?

Graphical Web Browser	68
FTP	17
Chat Rooms	18

Please indicate where services are offered.

Main Central Library Only	24
All Outlets	33
Some Outlets	12

Please give the number of existing Internet public access computers at your main or central library.

Text only	27
Graphical interface	231
Pentium	79
Other (older)	175

Please give the number of existing Internet staff access computers at your main or central library.

Text only	67
Graphical interface	617
Pentium	279
Other (older)	398

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Please give the number of existing Internet public access computers at your branch libraries.

Text only	53
Graphical interface	285
Pentium	106
Other (older)	208

Please give the number of existing Internet staff access computers at your branch libraries.

Text only	52
Graphical interface	714*
Pentium	313
Other (older)	449

*289 Fairfax County Public Library

Do you have a Local Area Network (LAN) in your library?

Central Library Only	47
Branches	18

If not, are you planning to install one in the next 12 months?

Yes	17
No	30

Will your branches be connected to this LAN?

Yes	13
No	3

How is your public access to the Internet funded?

Local Budget Item	47
State Aid	16
Donated by local ISP	34
Donated by other	14

Public Internet Use

Do you have an Acceptable Use Policy for the Internet?

Yes	62
No	28

Do you have a parental approval process for minors to access the Internet?

Yes	40
No	50

Do you provide separate rooms or areas for youth services?

Yes	43
No	47

Do you provide separate computers with Internet access for youth?

Yes	13
No	77
Number of computers available - youth	37

Do you have a time limit for Internet access?

30 minutes	49
60 minutes	15
Other	2

E-Rate Information

Did you submit an application for E-Rate telecommunications discount?

Yes	64
No	26

What is the total dollar amount of the Form(s) 471? $2,539,079

What is the discount for which your library is eligible?

20%	1
30%	0
40%	8
50%	9
60%	19
70%	15
80%	9
90%	1

What type of services did you request?

Eligible Services

Basic Phone Service	57
Leased Data Circuits	15
T-1, 56kbs, ISDN Lines	30
Dial-up internet access	14
Direct internet connections	16
E-mail	0
Wireless Connections	1

Eligible Internal Connections Requested

Telecommunications Wiring	12
Routers	13
Switches	6
Hubs	11
Network Servers	11
Certain Networking Software	6
Wireless LANs	0
Installation & basic maintenance	14
Private branch exchange (PBX)	3

1998 Survey of Public Access to the Internet in Virginia Public Libraries

Library Name	Total Local Population	Total Operating Income	Total FTE Staff	Total Equipment Expenditure	Number of Library Visits	Internet - Other than VLIN				Connection Dial-Up Modem/ Telecom	If Dial-Up, Nature of Connection				Fastest Speed of Dial-Up				Leased Line			
						Staff Only	Staff & Public Access	Public Access	No		Terminal Access	Internet Gateway	SLIP	Other	28.800 baud	33.600 baud	56K	Other	56K	T1	T3	Other
Pearisburg	2,054	$180,294	4	$18,063	27,020		1			1		1			1							
R. Iris Brammer	2,082	$38,573	1	$17,700	3,744				1													
Highland Co.	2,500	$42,189	1	$545	9,000		1			1			1				1					
Clifton Forge	4,500	$92,362	2	$0	18,860	1				1		1				1						
Rappahannock Co.	7,000	$94,555	1	$716	21,110		1			1		1										
Cumberland Co.	8,000	$72,078	2	$0	15,098				1													
Richmond Co.	8,700	$56,371	1	$0	NA		1			1										1		
Mathews	9,100	$100,342	2	$2,034	NA		1			1		1				1						
Essex	9,300	$85,099	3	$360	17,794		1			1			1		1							
Middlesex Co.	9,300	$115,214	3	$3,069	25,345		1			1			1			1						
Mary Riley Styles	9,800	$1,198,684	19	$46,357	196,493	1				1			1				1					
James L. Hamner	10,000	$78,174	3	$0	14,509				1													
Lancaster Co.	11,300	$236,754	4	$5,109	87,949			1		1		1				1						
Poquoson	11,300	$310,545	9	$6,769	143,975		1			1		1				1						
Northumberland Co.	11,400	$103,526	3	$5,861	22,047	1				1		1				1						
Charlotte Co.	12,000	$130,146	5	$0	20,327				1													
Madison Co. , Inc.	12,400	$71,474	3	$5,555	NA				1													
J. Robert Jamerson	13,000	$113,311	3	$0	18,237				1													
Nottoway Co.	15,400	$124,571	4	$2,345	25,662				1													
Radford	15,400	$366,431	9	$10,415	103,220		1			1										1		
L. E. Smoot	16,100	$239,799	6	$3,459	NA		1			1				1			1					
Colonial Heights	16,500	$381,833	6	$13,342	187,443		1			1		1					1					
Fluvanna Co.	16,700	$157,252	5	$1,954	33,351				1													
Bristol	17,300	$717,340	18	$11,760	152,190			1		1									1			
Heritage	18,800	$131,088	2	$4,218	18,777				1													
Waynesboro	18,900	$709,129	12	$0	296,495		1			1									1			
Charles P. Jones	19,900	$198,150	6	$3,015	61,453	1				1		1			1							
Powhatan Co.	20,000	$176,172	3	$3,116	NA				1													
Caroline , Inc.	21,300	$134,790	3	$5,449	21,645		1			1		1				1						
Orange Co.	24,100	$359,780	9	$1,884	NA		1			1		1					1					
Staunton	24,100	$826,963	22	$8,835	245,544		1			1									1			
Salem	24,600	$548,000	9	$12,424	188,566		1			1									1			
Botetourt Co.	28,300	$389,835	10	$1,981	84,916		1			1		1				1						
Russell Co.	29,100	$224,344	6	$17,474	63,649		1			1												1
Buchanan Co.	29,500	$342,550	7	$12,083	176,488		1			1												1
Samuels	29,500	$385,913	10	$6,294	NA		1			1		1					1					
Amherst Co.	30,100	$487,393	37	$0	46,800				1													

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1998 Survey of Public Access to the Internet in Virginia Public Libraries

						Internet - Other than VLIN					If Dial-Up, Nature of Connection				Fastest Speed of Dial-Up				Leased Line			
Library Name	Total Local Population	Total Operating Income	Total FTE Staff	Total Equipment Expenditure	Number of Library Visits	Staff Only	Staff & Public Access	Public Access	No	Connection Dial-Up Modem/ Telecom	Terminal Access	Internet Gateway	SLIP	Other	28,800 baud	33,600 baud	56K	Other	56K	T1	T3	Other
Culpeper	31,700	$258,967	7	$2,324	NA		1			1										1		
Central Virginia	33,100	$198,422	5	$3,626	33,499		1			1		1			1							
Gloucester	33,200	$299,310	9	$4,848	57,264			1		1									1			
Meherrin	33,300	$440,923	12	$15,568	520,000		1			1				1			1					
Shenandoah Co.	34,300	$202,440	5	$2,021	37,141		1			1		1			1							
Pulaski Co.	34,900	$383,319	10	$4,291	79,482		1			1		1				1				1		
Galax-Carroll	35,000	$367,671	9	$27,348	94,138		1			1		1			1							
Petersburg	36,100	$757,744	15	$56,215	135,735		1			1										1		
Rockbridge	37,700	$731,443	24	$25,683	169,312		1			1									1			
Halifax /S. Boston	37,900	$368,599	10	$1,000	84,739		1			1				1			1		1			
Smyth-Bland	39,900	$810,176	20	$30,919	152,292		1			1												1
Wythe-Grayson	43,000	$537,850	17	$8,204	87,126		1			1			1		1							
Southside	43,300	$532,812	15	$15,047	106,979		1			1		1				1						
Franklin Co.	44,200	$418,586	9	$20,955	81,124		1			1				1	1							1
Eastern Shore	45,200	$475,560	7	$40,515	78,104		1			1				1				1				
Tazewell Co.	47,100	$590,417	21	$32,701	228,125		1			1		1				1						
Campbell Co.	49,400	$605,520	17	$13,107	181,336				1													
Washington Co.	49,900	$850,378	21	$39,264	190,080		1			1										1		
Fauquier Co.	51,200	$1,046,729	26	$3,816	278,392			1		1			1			1						
Danville	52,300	$788,867	17	$93,136	101,959	1				1				1		1						
Williamsburg	53,900	$3,823,636	81	$185,675	NA		1			1				1				1				
York Co.	55,800	$725,585	16	$14,993	NA		1			1			1				1			1		
Pittsylvania Co.	57,300	$397,388	13	$3,727	43,667		1			1		1			1							
Suffolk	57,600	$1,114,222	16	$32,809	128,665	1				1		1					1					
Augusta Co.	60,800	$721,761	17	$10,096	194,664		1			1												1
Bedford	60,800	$969,559	28	$5,184	NA		1			1		1				1						1
Lynchburg	65,600	$1,398,246	31	$58,342	NA	1				1										1		
W. C. Rawls	70,800	$1,065,490	27	$47,521	153,527			1		1					1							
Appomattox	75,100	$877,172	24	$58,698	80,905		1			1												1
Roanoke Co.	82,000	$1,737,474	39	$63,069	662,846		1			1									1			
Handley	88,800	$1,324,799	25	$49,462	217,801		1			1			1				1					
Mont.-Floyd	89,300	$1,743,242	37	$72,529	255,320		1			1										1		
Blue Ridge	90,400	$1,609,591	29	$57,832	362,049		1			1			1			1						
Portsmouth	100,000	$1,654,323	30	$63,113	NA		1			1				1	1							
Roanoke City	100,600	$2,863,244	45	$75,543	257,468		1			1												1
Lonesome Pine	108,200	$2,299,482	49	$211,843	439,589		1			1										1		
Pamunkey	112,200	$1,920,479	54	$34,325	NA		1			1		1				1						

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1998 Survey of Public Access to the Internet in Virginia Public Libraries

Library Name	Total Local Population	Total Operating Income	Total FTE Staff	Total Equipment Expenditure	Number of Library Visits	Internet - Other than VLIN				Connection Dial Up Modem/ Telecom	If Dial Up, Nature of Connection				Fastest Speed of Dial-Up				Leased Line			
						Staff Only	Staff & Public Access	Public Access	No		Terminal Access	Internet Gateway	SLIP	Other	28.800 baud	33.600 baud	56K	Other	56K	T1	T3	Other
Alexandria	115 000	$3 807 970	62	$62 878	1 034 953		1			1										1		
Rockingham	120 200	$969 726	30	$50 428	NA		1			1		1				1			1			
Loudoun Co	125 500	$4 391 122	95	$80 073	966 626		1			1		1					1					
Hampton	137 700	$2 124 521	53	$85 249	659 445		1			1		1				1						
Jeff. Madison	167 000	$3 844 726	66	$56 489	NA		1			1										1		
Newport News	177 500	$2 942 503	76	$155 024	660 868		1			1		1					1					
Arlington	180 600	$9 021 342	146	$297 528	1 396 669		1			1										1		
Chesapeake	188 400	$5 133 089	121	$254 959	1 321 677		1			1										1		
Richmond	194 100	$3 984 012	85	$56 753	720 388		1			1		1				1				1		
Cen. Rappahannock	195 000	$5 290 406	91	$68 084	1 048 977		1			1										1		
Norfolk	231 900	$4 394 844	64	$51 911	533 600		1			1			1						1			
Henrico Co	238 900	$6 302 164	137	$57 017	1 398 058	1				1		1					1					
Chesterfield Co	243 000	$5 120 245	112	$47 658	1 733 997	1				1		1					1					
Prince William	288 000	$11 982 544	168	$272 582	1 524 484		1			1										1		
Virginia Beach	419 200	$11 113 124	193	$82 090	1 762 156		1			1								1				
Fairfax Co	932 000	$23 986 060	461	$715 003	5 024 760		1			1										1		
TOTALS	6 665 236	$151 340 848	3 050	$4 111 261	27 627 713	9	64	5	12	78	0	30	10	8	13	20	13	2	10	18	0	8

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1998 Survey of Public Access to the Internet in Virginia Public Libraries

Library Name	Total Local Population	Planning on obtaining local connection within 12 months?				If yes, Type of connection		Graphical Web Browser	FTP	Chat Rooms	Internet Services			Fee for browsing	
		No	Staff Only	Staff & Public	Public Access	Dial-Up	Leased				Main or Central Only	All Outlets	Some Outlets	Yes	No
Pearisburg	2,054										1				
R. Iris Brammer	2,082														
Highland Co.	2,500							1	1		1				1
Clifton Forge	4,500														
Rappahannock Co.	7,000							1			1				1
Cumberland Co.	8,000	1													
Richmond Co.	8,700							1			1				1
Mathews	9,100							1			1				1
Essex	9,300							1			1				1
Middlesex Co.	9,300							1				1			1
Mary Riley Styles	9,800														
James L. Hamner	10,000			1			1								
Lancaster Co.	11,300							1			1				1
Poquoson	11,300							1			1				1
Northumberland Co.	11,400														
Charlotte Co.	12,000	1													
Madison Co., Inc.	12,400		1				1								
J. Robert Jamerson	13,000				1		1								
Nottoway Co.	15,400			1			1								
Radford	15,400							1		1	1				1
L. E. Smoot	16,100							1	1	1	1				1
Colonial Heights	16,500							1		1	1				1
Fluvanna Co.	16,700			1			1								
Bristol	17,300							1	1	1			1		1
Heritage	18,800		1				1								
Waynesboro	18,900							1			1				1
Charles P. Jones	19,900														
Powhatan Co.	20,000			1			1								
Caroline, Inc.	21,300							1					1		1

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1998 Survey of Public Access to the Internet in Virginia Public Libraries

Library Name	Total Local Population	Planning on obtaining local connection within 12 months?				If yes, Type of connection		Graphical Web Browser	FTP	Chat Rooms	Internet Services			Fee for browsing	
		No	Staff Only	Staff & Public	Public Access	Dial-Up	Leased				Main or Central Only	All Outlets	Some Outlets	Yes	No
Orange Co	24,100							1				1			1
Staunton	24,100							1		1	1				1
Salem	24,600							1			1				1
Botetourt Co	28,300							1				1			1
Russell Co	29,100							1		1	1				1
Buchanan Co	29,500							1	1		1				1
Samuels	29,500							1	1		1				1
Amherst Co	30,100		1			1									1
Culpeper	31,700							1	1		1				1
Central Virginia	33,100							1					1		1
Gloucester	33,200							1	1	1		1			1
Meherrin	33,300							1				1			1
Shenandoah Co	34,300							1					1		1
Pulaski Co	34,900							1		1		1			1
Galax-Carroll	35,000							1				1			1
Petersburg	36,100							1	1			1			1
Rockbridge	37,700							1		1		1			1
Halifax /S. Boston	37,900							1				1			1
Smyth-Bland	39,900							1				1			1
Wythe-Grayson	43,000							1	1	1		1			1
Southside	43,300							1					1		1
Franklin Co	44,200							1		1	1				1
Eastern Shore	45,200							1					1		1
Tazewell Co	47,100							1				1			1
Campbell Co	49,400			1			1								
Washington Co	49,900							1	1	1		1			1
Fauquier Co	51,200			1			1	1				1			1
Danville	52,300														1
Williamsburg	53,900							1				1			1

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1998 Survey of Public Access to the Internet in Virginia Public Libraries

Library Name	Total Local Population	Planning on obtaining local connection within 12 months?				If yes, Type of connection		Graphical Web Browser	FTP	Chat Rooms	Internet Services			Fee for browsing	
		No	Staff Only	Staff & Public	Public Access	Dial-Up	Leased				Main or Central Only	All Outlets	Some Outlets	Yes	No
York Co	55,800							1			1				1
Pittsylvania Co	57,300							1	1				1		1
Suffolk	57,600														
Augusta Co	60,800							1			1				1
Bedford	60,800							1				1			1
Lynchburg	65,600			1			1								
W. C. Rawls	70,800			1		1		1					1		1
Appomattox	75,100							1		1	1				1
Roanoke Co	82,000							1					1		1
Handley	88,800							1	1			1			1
Mont.-Floyd	89,300							1	1	1		1			1
Blue Ridge	90,400							1	1			1			1
Portsmouth	100,000							1					1		1
Roanoke City	100,600							1			1				1
Lonesome Pine	108,200							1		1		1			1
Pamunkey	112,200							1				1			1
Alexandria	115,000							1				1			1
Rockingham	120,200							1	1				1		1
Loudoun Co	125,500							1				1			1
Hampton	137,700							1				1			1
Jeff.-Madison	167,000							1	1	1			1		1
Newport News	177,500							1				1			1
Arlington	180,600							1				1			1
Chesapeake	188,400							1				1			1
Richmond	194,100							1				1			1
Cen. Rappahannock	195,000							1	1	1			1		1
Norfolk	231,900							1		1		1			1
Henrico Co	238,900														
Chesterfield Co	243,000														

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1998 Survey of Public Access to the Internet in Virginia Public Libraries

Library Name	Total Local Population	Planning on obtaining local connection within 12 months?				If yes, Type of connection		Graphical Web Browser	FTP	Chat Rooms	Internet Services			Fee for browsing	
		No	Staff Only	Staff & Public	Public Access	Dial-Up	Leased				Main or Central Only	All Outlets	Some Outlets	Yes	No
Prince William	288,000							1					1		1
Virginia Beach	419,200							1			1				1
Fairfax Co	932,000							1				1			1

Library Name	Total Local Population	Planning on obtaining local connection within 12 months?				If yes, Type of connection		Graphical Web Browser	FTP	Chat Rooms	Internet Services			Fee for browsing	
		No	Staff Only	Staff & Public	Public Access	Dial-Up	Leased				Main or Central Only	All Outlets	Some Outlets	Yes	No
TOTALS	6,665,236	2	3	8	1	9	3	68	17	18	24	33	12	0	70

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1998 Survey of Public Access to the Internet in Virginia Public Libraries by Population

Library Name	Total Local Population	Computers - Type & No. Main - Public						Computers - Type & No. Main - Staff Only					
		No	Yes	Text-Based Interfaces	Graphical Interfaces	No. of Pentium	No. of others	No	Yes	Text-Based Interfaces	Graphical Interfaces	No. of Pentium	No. of others
Pearisburg	2,054		1		3	3			1		1	1	
R. Ins Brammer	2,082	1						1					
Highland Co.	2,500		1		1		1		1		1	1	
Clifton Forge	4,500	1							1		1		1
Rappahannock Co.	7,000		1		1		1		1	1			1
Cumberland Co.	8,000	1							1	1			1
Richmond Co.	8,700		1	4	18	13	9		1		7	3	4
Mathews	9,100		1		1		1		1		1		1
Essex	9,300		1		1		1		1		1		1
Middlesex Co.	9,300		1		2	2			1	1			1
Mary Riley Styles	9,800	1							1		5	5	
James L. Hamner	10,000	1							1	1			1
Lancaster Co.	11,300		1		1		1		1	1	2	1	2
Poquoson	11,300		1		2	2			1	1	3	3	1
Northumberland Co.	11,400	1							1		2		2
Charlotte Co.	12,000	1							1	1			1
Madison Co. , Inc.	12,400	1							1	1		1	
J. Robert Jamerson	13,000	1							1	3			3
Nottoway Co.	15,400	1							1	1			1
Radford	15,400		1		2	1	1		1		3	1	2
L. E. Smoot	16,100		1		1		1		1		2		2
Colonial Heights	16,500		1		5	3	2	1					
Fluvanna Co.	16,700	1							1	1		1	
Bristol	17,300		1		3	3			1		3	3	
Heritage	18,800	1						1					
Waynesboro	18,900		1		2		2		1		2		2
Charles P. Jones	19,900	1							1		1	1	
Powhatan Co.	20,000	1						1					
Caroline , Inc.	21,300		1		1		1		1		2	2	
Orange Co.	24,100		1		1	1			1		1	1	
Staunton	24,100		1		4	3	1		1	2	3	2	3
Salem	24,600		1		5	3	2		1		5	3	2
Botetourt Co.	28,300		1		1		1		1		1		1
Russell Co.	29,100		1		7	1	6		1		5	2	3
Buchanan Co.	29,500		1		6	4	2		1		6	6	1
Samuels	29,500		1		1	1			1	1	3	3	1
Amherst Co.	30,100	1						1					
Culpeper	31,700		1		4	4			1		9	9	
Central Virginia	33,100	1						1					
Gloucester	33,200		1		3		3		1		4		4

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1998 Survey of Public Access to the Internet in Virginia Public Libraries by Population

Library Name	Total Local Population	Computers - Type & No. Main - Public						Computers - Type & No. Main - Staff Only					
		No	Yes	Text-Based Interfaces	Graphical Interfaces	No. of Pentium	No. of others	No	Yes	Text-Based Interfaces	Graphical Interfaces	No. of Pentium	No. of others
Meherrin	33,300		1		1	1			1	1	1	1	2
Shenandoah Co.	34,300		1		1		1		1		2	1	1
Pulaski Co.	34,900		1		3		3		1		5	5	
Galax-Carroll	35,000		1		2	2			1		3	3	
Petersburg	36,100		1		4		4		1		10	5	5
Rockbridge	37,700		1	5	5	1	9		1	6	11	3	14
Halifax /S. Boston	37,900		1		1	1			1	1		1	0
Smyth-Bland	39,900		1		10		10		1		13		13
Wythe-Grayson	43,000		1		1		1		1	1		1	
Southside	43,300	1						1					
Franklin Co.	44,200		1		3		3		1	2	1		3
Eastern Shore	45,200		1		2	2			1		9	4	5
Tazewell Co.	47,100		1		1	1			1		3	3	
Campbell Co.	49,400	1							1	2		1	1
Washington Co.	49,900		1		5		5		1		12	5	7
Fauquier Co.	51,200		1		1		1		1	7		4	3
Danville	52,300		1		3	3			1		3	3	
Williamsburg	53,900		1		8	4	4		1		60	20	40
York Co.	55,800		1		2	1	1		1		7	5	2
Pittsylvania Co.	57,300		1		1		1		1	1			1
Suffolk	57,600	1					0		1		2	1	1
Augusta Co.	60,800		1		2		2		1	2	9	2	9
Bedford	60,800		1		2		2		1		8	6	2
Lynchburg	65,600	1					0		1		13		13
W. C. Rawls	70,800	1					0	1					
Appomattox	75,100		1		4		4		1		10	3	7
Roanoke Co.	82,000		1		6	3	3		1		10	1	9
Handley	88,800		1		2		2		1		1	0	1
Mont.-Floyd	89,300		1		6		6		1		21	4	17
Blue Ridge	90,400		1		1		1		1	2	3	2	3
Portsmouth	100,000		1		1		1		1	2		1	1
Roanoke City	100,600		1		5	5			1		9	3	6
Lonesome Pine	108,200		1		3	2	1		1		3	3	
Pamunkey	112,200	1					0	1					
Alexandria	115,000		1		4		4		1		14	13	1
Rockingham	120,200		1		2	2			1		9	9	
Loudoun Co.	125,500	1				0		1					
Hampton	137,700		1		1	1			1		11	2	9
Jeff.-Madison	167,000		1		13		13		1		15		15
Newport News	177,500	1						1					

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1998 Survey of Public Access to the Internet in Virginia Public Libraries by Population

Library Name	Total Local Population	Computers - Type & No. Main - Public						Computers - Type & No. Main - Staff Only					
		No	Yes	Text Based Interfaces	Graphical Interfaces	No. of Pentium	No. of others	No	Yes	Text-Based Interfaces	Graphical Interfaces	No. of Pentium	No. of others
Arlington	180,600		1		21		21		1	1	73	42	32
Chesapeake	188,400		1		10		10		1		100	40	60
Richmond	194,100		1		6	6			1		11	11	
Cen. Rappahannock	195,000		1		6		6		1	10	43	21	32
Norfolk	231,900		1	4	5		5		1	1	22		22
Henrico Co.	238,900	1						1					
Chesterfield Co.	243,000	1							1	12	7	2	10
Prince William	288,000	1						1					
Virginia Beach	419,200		1	14	1		15		1		9		9
Fairfax Co.	932,000	1				0		1					

Library Name	Total Local Population	Computers - Type & No. Main - Public						Computers - Type & No. Main - Staff Only					
		No	Yes	Text-Based Interfaces	Graphical Interfaces	No. of Pentium	No. of others	No	Yes	Text-Based Interfaces	Graphical Interfaces	No. of Pentium	No. of others
TOTALS	6,665,236	28	62	27	231	79	175	14	76	67	617	279	398

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1998 Survey of Public Access to the Internet in Virginia Public Libraries

Library Name	Total Local Population	Computers - Type & No. Outlets - Public						Computers - Type & No. Outlets - Staff					
		No	Yes	Text Based Interfaces	Graphical Interfaces	No. of Pentium	No. of others	No	Yes	Text Based Interfaces	Graphical Interfaces	No. of Pentium	No. of others
Pearisburg	2,054	1						1					
R. Iris Brammer	2,082	1						1					
Highland Co	2,500	1						1					
Clifton Forge	4,500	1						1					
Rappahannock Co	7,000	1						1					
Cumberland Co	8,000	1						1					
Richmond Co	8,700	1						1					
Mathews	9,100	1						1					
Essex	9,300	1						1					
Middlesex Co	9,300		1			1	1	1					
Mary Riley Styles	9,800	1						1					
James L. Hamner	10,000	1						1					
Lancaster Co	11,300	1						1					
Poquoson	11,300	1						1					
Northumberland Co	11,400	1						1					
Charlotte Co	12,000	1						1					
Madison Co., Inc	12,400	1						1					
J. Robert Jamerson	13,000	1						1					
Nottoway Co	15,400	1						1					
Radford	15,400	1						1					
L. E. Smoot	16,100	1						1					
Colonial Heights	16,500	1						1					
Fluvanna Co	16,700	1						1					
Bristol	17,300		1			1	1	1					
Heritage	18,800	1						1					
Waynesboro	18,900	1						1					
Charles P. Jones	19,900	1						1					
Powhatan Co	20,000	1						1					
Caroline, Inc	21,300		1			2	2	1					
Orange Co	24,100		1			2	2		1		1	1	
Staunton	24,100	1						1					
Salem	24,600	1						1					
Botetourt Co	28,300		1			3	2	1	1				
Russell Co	29,100	1						1					
Buchanan Co	29,500	1						1					
Samuels	29,500	1						1					
Amherst Co	30,100	1						1					
Culpeper	31,700	1						1					
Central Virginia	33,100		1			1	1		1	2			2
Gloucester	33,200		1			3		3	1		1		1
Meherrin	33,300		1			2	1	1	1	1			1

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1998 Survey of Public Access to the Internet in Virginia Public Libraries

Library Name	Total Local Population	Computers - Type & No. Outlets - Public						Computers - Type & No. Outlets - Staff					
		No	Yes	Text-Based Interfaces	Graphical Interfaces	No. of Pentium	No. of others	No	Yes	Text-Based Interfaces	Graphical Interfaces	No. of Pentium	No. of others
Shenandoah Co.	34,300		1		1			1	1				
Pulaski Co.	34,900		1		1			1	1				
Galax-Carroll	35,000		1		3	3			1		1	1	
Petersburg	36,100		1		3			3	1		1		1
Rockbridge	37,700		1	4	8			12	1	4			4
Halifax /S. Boston	37,900		1		1	1			1	1			1
Smyth-Bland	39,900		1		4			4	1		2		2
Wythe-Grayson	43,000		1		3			3	1		1		1
Southside	43,300		1		5	2		3	1	6			6
Franklin Co.	44,200	1							1				
Eastern Shore	45,200		1		2	2			1				
Tazewell Co.	47,100		1		2	2			1		2	2	
Campbell Co.	49,400	1							1				
Washington Co.	49,900		1		8			8	1		4		4
Fauquier Co.	51,200		1		2			2	1	3		1	2
Danville	52,300	1							1				
Williamsburg	53,900	1							1				
York Co.	55,800	1							1				
Pittsylvania Co.	57,300		1		1			1	1				
Suffolk	57,600	1							1				
Augusta Co.	60,800	1							1				
Bedford	60,800		1		4	4			1		1		1
Lynchburg	65,600	1							1		1		1
W. C. Rawls	70,800		1		2	2			1		1	1	
Appomattox	75,100	1							1				
Roanoke Co.	82,000		1		14	7		7	1		8		8
Handley	88,800		1		1	1			1				
Mont.-Floyd	89,300		1		8			8	1		19	3	16
Blue Ridge	90,400		1		3			3	1	3	2		5
Portsmouth	100,000		1		1	1			1	1	3	2	2
Roanoke City	100,600	1							1		5		5
Lonesome Pine	108,200		1		10	7		3	1		1	1	
Pamunkey	112,200		1		26	26			1		22	22	
Alexandria	115,000		1		2			2	1		10	10	
Rockingham	120,200		1		2	1		1	1		5	5	
Loudoun Co.	125,500		1		10	10		0	1		13	13	
Hampton	137,700		1		3	3		0	1		6		6
Jeff.-Madison	167,000		1		2	0		2	1		5		5
Newport News	177,500		1		9	5		4	1		4		4
Arlington	180,600		1		26	0		26	1		27	6	21
Chesapeake	188,400		1		25	10		15	1		25	15	10

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1998 Survey of Public Access to the Internet in Virginia Public Libraries

Library Name	Total Local Population	Computers - Type & No. Outlets - Public						Computers - Type & No. Outlets - Staff					
		No	Yes	Text Based Interfaces	Graphical Interfaces	No. of Pentium	No. of others	No	Yes	Text Based Interfaces	Graphical Interfaces	No. of Pentium	No. of others
Richmond	194,100		1		8	5	3	1					
Cen. Rappahanno	195,000		1		11	0	11		1	5	19	9	15
Norfolk	231,900		1	24	14	0	14		1	4	18	0	18
Henrico Co.	238,900	1							1	14	44	44	14
Chesterfield Co.	243,000	1							1	7			7
Prince William	288,000		1		5	0	5		1		101	21	80
Virginia Beach	419,200		1	25	0	0	25		1		72		72
Fairfax Co.	932,000		1		40	6	34		1		289	156	133

Library Name	Total Local Population	Computers - Type & No. Outlets - Public						Computers - Type & No. Outlets - Staff					
		No	Yes	Text Based Interfaces	Graphical Interfaces	No. of Pentium	No. of others	No	Yes	Text Based Interfaces	Graphical Interfaces	No. of Pentium	No. of others
TOTALS	6,665,236	45	45	53	285	106	208	51	39	52	714	313	449

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1998 Survey of Public Access to the Internet in Virginia Public Libraries

Library Name	Total Local Population	Does your central/main library have a LAN?		Outlets connected to LAN			LAN next 12 months?		Outlets connected - next 12 months?			Public access Internet funded				If donated -	
		No	Yes	No	Yes	How Many?	No	Yes	No	Yes	How Many?	Locally Funded	State Aid Funded	Donated by ISP	Donated Other	Ongoing	Specified time period
Pearisburg	2,054	1					1					1		1		1	
R. Iris Brammer	2,082	1					1										
Highland Co.	2,500	1					1					1	1				
Clifton Forge	4,500	1					1							1		1	
Rappahannock Co.	7,000	1					1										
Cumberland Co.	8,000	1					1					1	1				
Richmond Co.	8,700			1										1			1
Mathews	9,100	1					1							1		1	
Essex	9,300	1						1						1		1	
Middlesex Co.	9,300	1						1		1	2						
Mary Riley Styles	9,800			1													
James L. Hamner	10,000	1						1									
Lancaster Co.	11,300	1					1					1	1	1	1	1	
Poquoson	11,300	1					1							1		1	
Northumberland Co.	11,400			1													
Charlotte Co.	12,000	1					1										
Madison Co. , Inc.	12,400			1													
J. Robert Jamerson	13,000	1						1									
Nottoway Co.	15,400			1	1							1	1	1		1	
Radford	15,400			1										1		1	
L. E. Smoot	16,100	1					1										
Colonial Heights	16,500	1					1					1					
Fluvanna Co.	16,700	1					1										
Bristol	17,300			1								1					
Heritage	18,800	1					1										
Waynesboro	18,900			1										1			1
Charles P. Jones	19,900	1					1					1					
Powhatan Co.	20,000	1					1										
Caroline , Inc.	21,300	1							1		1	2		1		1	
Orange Co.	24,100	1					1					1		1			1
Staunton	24,100			1											1	1	
Salem	24,600			1								1					
Botetourt Co.	28,300			1		1	2					1					
Russell Co.	29,100			1								1	1	1	1		1
Buchanan Co.	29,500			1								1					
Samuels	29,500	1					1					1		1		1	
Amherst Co.	30,100	1					1										

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1998 Survey of Public Access to the Internet in Virginia Public Libraries

Library Name	Total Local Population	Does your central/main library have a LAN?		Outlets connected to LAN			LAN next 12 months?		Outlets connected - next 12 months?			Public access Internet funded				If donated -	
		No	Yes	No	Yes	How Many?	No	Yes	No	Yes	How Many?	Locally Funded	State Aid Funded	Donated by ISP	Donated Other	Ongoing	Specified time period
Culpeper	31,700	1					1					1					1
Central Virginia	33,100	1					1							1			
Gloucester	33,200			1		1	1							1		1	
Mehemn	33,300			1	1									1		1	
Shenandoah Co	34,300			1	1				1		1	5	1			1	1
Pulaski Co	34,900			1		1	1								1	1	1
Galax-Carroll	35,000	1						1					1				
Petersburg	36,100			1		1	2						1				
Rockbridge	37,700			1	1										1	1	1
Halifax /S. Boston	37,900	1						1					1				
Smyth-Bland	39,900			1		1	2							1			
Wythe-Grayson	43,000	1							1	1			1				
Southside	43,300	1						1						1	1	1	
Franklin Co	44,200	1						1					1				
Eastern Shore	45,200			1													
Tazewell Co	47,100	1							1	1				1		1	
Campbell Co	49,400	1							1		1	3					
Washington Co	49,900			1	1								1				
Fauquier Co	51,200	1							1		1	2		1		1	
Danville	52,300	1						1					1				
Williamsburg	53,900			1										1		1	
York Co	55,800	1							1		1	1	1				
Pittsylvania Co	57,300			1	1								1				
Suffolk	57,600	1						1									
Augusta Co	60,800			1	1								1	1		1	
Bedford	60,800			1	1				1		1	5	1		1	1	
Lynchburg	65,600			1		1	1										
W. C. Rawls	70,800	1						1							1	1	
Appomattox	75,100			1	1				1		1	6	1	1		1	
Roanoke Co	82,000			1									1				
Handley	88,800	1							1		1	1		1	1	1	
Mont.-Floyd	89,300			1		1	3						1				
Blue Ridge	90,400	1						1					1				
Portsmouth	100,000	1							1		1	3	1		1	1	1
Roanoke City	100,600			1	1								1				
Lonesome Pine	108,200			1		1	9							1			
Pamunkey	112,200	1							1		1	10	1	1	1		1

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1998 Survey of Public Access to the Internet in Virginia Public Libraries

Library Name	Total Local Population	Does your central/main library have a LAN?		Outlets connected to LAN			LAN next 12 months?		Outlets connected next 12 months?			Public access Internet funded				If donated	
		No	Yes	No	Yes	How Many?	No	Yes	No	Yes	How Many?	Locally Funded	State Aid Funded	Donated by ISP	Donated Other	Ongoing	Specified time period
Alexandria	115,000		1		1	4									1	1	
Rockingham	120,200		1		1	6						1		1		1	
Loudoun Co	125,500		1														
Hampton	137,700		1		1	3						1					
Jeff. Madison	167,000		1				1		1		9						
Newport News	177,500		1		1	5											
Arlington	180,600		1		1	8						1					
Chesapeake	188,400		1		1	5						1					
Richmond	194,100		1	1					1			1					
Cen. Rappahannock	195,000		1		1	6						1					
Norfolk	231,900		1		1	11						1		1	1	1	
Henrico Co	238,900		1		1	10											
Chesterfield Co	243,000		1							1	10	1					
Prince William	288,000	1					1					1					
Virginia Beach	419,200		1									1					
Fairfax Co	932,000		1		1	1						1		1			1

Library Name	Total Local Population	Does your central/main library have a LAN?		Outlets connected to LAN			LAN next 12 months?		Outlets connected next 12 months?			Public access Internet funded				If donated	
		No	Yes	No	Yes	How Many?	No	Yes	No	Yes	How Many?	Locally Funded	State Aid Funded	Donated by ISP	Donated Other	Ongoing	Specified time period
TOTALS	6,665,236	43	47	11	18	80	30	17	3	13	59	47	16	34	14	33	7

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1998 Survey of Public Access to the Internet in Virginia Public Libraries

Library Name	Total Local Population	Acceptable Use Policy		Parental Approval Process		Separate Rooms for Youth		Separate Computers for Youth			Name of filtering software?	Time Limit for Internet Access				
		Yes	No	Yes	No	Yes	No	Yes	No	How Many?		Yes	No	30 minutes	60 minutes	Other
Pearisburg	2,054	1				1	1			1		1			1	
R. Iris Brammer	2,082		1			1		1		1			1			
Highland Co.	2,500	1		1				1		1		1		1		
Clifton Forge	4,500		1			1		1		1			1			
Rappahannock Co.	7,000	1				1		1		1			1			
Cumberland Co.	8,000		1			1		1		1			1			
Richmond Co.	8,700	1		1			1			1		1			1	
Mathews	9,100	1		1			1			1		1				20 mins
Essex	9,300	1		1			1			1		1		1		
Middlesex Co.	9,300	1		1				1		1		1		1		
Mary Riley Styles	9,800		1			1	1			1			1			
James L. Hamner	10,000		1			1	1			1			1			
Lancaster Co.	11,300	1		1			1			1		1			1	
Poquoson	11,300	1		1			1			1		1		1		
Northumberland Co.	11,400		1			1	1			1			1			
Charlotte Co.	12,000		1			1		1		1			1			
Madison Co., Inc.	12,400		1			1		1		1			1			
J. Robert Jamerson	13,000		1			1	1			1			1			
Nottoway Co.	15,400		1			1		1		1			1			
Radford	15,400	1				1	1			1		1		1		
L. E. Smoot	16,100	1		1				1		1		1		1		
Colonial Heights	16,500	1				1		1		1			1			
Fluvanna Co.	16,700		1			1	1			1			1			
Bristol	17,300	1		1			1			1		1			1	
Heritage	18,800		1			1		1		1			1			
Waynesboro	18,900	1		1				1		1	X-Stop	1		1		
Charles P. Jones	19,900		1			1		1		1			1			
Powhatan Co.	20,000		1			1	1			1			1			
Caroline, Inc.	21,300		1			1	1			1		1		1		
Orange Co.	24,100	1		1				1		1		1		1		
Staunton	24,100	1		1				1		1		1		1		
Salem	24,600	1				1	1		1		1 Surf Watch	1		1		
Botetourt Co.	28,300		1			1		1		1		1		1		
Russell Co.	29,100	1		1			1			1		1		1		
Buchanan Co.	29,500	1		1				1		1		1		1		
Samuels	29,500	1		1			1			1	Surfwatch	1		1		
Amherst Co.	30,100		1			1		1		1			1			
Culpeper	31,700	1		1				1		1		1			1	

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1998 Survey of Public Access to the Internet in Virginia Public Libraries

Library Name	Total Local Population	Acceptable Use Policy		Parental Approval Process		Separate Rooms for Youth		Separate Computers for Youth			Name of filtering software?	Time Limit for Internet Access				
		Yes	No	Yes	No	Yes	No	Yes	No	How Many?		Yes	No	30 minutes	60 minutes	Other
Central Virginia	33,100	1			1		1		1			1			1	
Gloucester	33,200	1		1			1		1		Cyber Patrol	1				
Meherrin	33,300	1		1			1		1			1		1		
Shenandoah Co	34,300	1		1			1		1			1		1		
Pulaski Co	34,900	1		1		1		1		1	Cyber Patrol	1		1		
Galax-Carroll	35,000	1		1			1		1			1				1
Petersburg	36,100	1		1		1			1			1		1		
Rockbridge	37,700	1		1		1		1		1		1		1		
Halifax /S. Boston	37,900	1		1			1		1			1		1		
Smyth-Bland	39,900	1		1		1		1		3	Surfwatch	1				1
Wythe-Grayson	43,000	1		1		1			1			1		1		
Southside	43,300	1		1			1		1			1		1		
Franklin Co	44,200		1		1		1		1			1				
Eastern Shore	45,200		1		1		1		1			1		1		
Tazewell Co	47,100	1		1		1			1				1			
Campbell Co	49,400		1		1		1		1			1		1		
Washington Co	49,900	1		1			1		1			1		1		
Fauquier Co	51,200	1		1		1			1			1		1		
Danville	52,300		1		1	1			1			1			1	
Williamsburg	53,900	1			1		1		1			1		1		
York Co	55,800		1		1		1		1			1		1		
Pittsylvania Co	57,300	1			1		1		1				1			
Suffolk	57,600		1		1		1		1			1		1		
Augusta Co	60,800	1			1	1			1			1		1		
Bedford	60,800	1			1		1		1				1			
Lynchburg	65,600		1		1		1		1			1			1	
W. C. Rawls	70,800	1		1			1		1			1		1		
Appomattox	75,100	1		1			1		1			1		1		
Roanoke Co	82,000	1			1	1		1		2	Surfwatch	1		1		
Hardley	88,800	1		1			1		1			1		1		
Mont.-Floyd	89,300	1			1	1		1		3		1		1		
Blue Ridge	90,400	1		1		1			1			1		1		
Portsmouth	100,000	1		1			1		1			1		1		
Roanoke City	100,600	1			1	1		1		2	Web Sense	1		1		
Lonesome Pine	108,200	1			1		1		1			1		1		
Pamunkey	112,200	1		1			1		1			1		1		
Alexandria	115,000	1			1	1			1			1				1
Rockingham	120,200	1			1	1			1			1			1	

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1998 Survey of Public Access to the Internet in Virginia Public Libraries

Library Name	Total Local Population	Acceptable Use Policy		Parental Approval Process		Separate Rooms for Youth		Separate Computers for Youth			Name of filtering software?	Time Limit for Internet Access				
		Yes	No	Yes	No	Yes	No	Yes	No	How Many?		Yes	No	30 minutes	60 minutes	Other
Loudoun Co	125,500	1		1			1		1		X-Stop - Librarian Edition	1			1	
Hampton	137,700	1		1		1			1		Surfwatch	1			1	
Jeff -Madison	167,000	1			1		1		1			1				2 hrs/day
Newport News	177,500	1		1		1			1			1		1		
Arlington	180,600	1			1	1		1		11		1			1	
Chesapeake	188,400	1			1	1		1		6	Cyberpatrol	1		1		
Richmond	194,100	1		1		1		1		1		1		1		
Cen. Rappahannock	195,000		1		1	1		1		3		1		1		
Norfolk	231,900	1			1	1		1		2			1			
Henrico Co	238,900		1		1		1		1				1			
Chesterfield Co	243,000		1		1	1			1			1		1		
Prince William	288,000	1			1	1		1		1		1			1	
Virginia Beach	419,200		1		1	1			1			1		1		
Fairfax Co	932,000	1			1		1		1							

Library Name	Total Local Population	Acceptable Use Policy		Parental Approval Process		Separate Rooms for Youth		Separate Computers for Youth			Name of filtering software?	Time Limit for Internet Access				
		Yes	No	Yes	No	Yes	No	Yes	No	How Many?		Yes	No	30 minutes	60 minutes	Other
TOTALS	6,665,236	62	28	40	50	43	47	13	77	37		68	22	49	15	2

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1998 Survey of Public Access to the Internet in Virginia Public Libraries

						60 %	70 %	80 %	90 %	Basic Phone	Leased Data Circuits	56kbs ISDN Lines	Dial-up Internet Access	Direct Internet Connections	Wireless Connections	Telecommunications Wiring	Routers	Switches	Hubs	Network Servers	Certain Networking Software	Installation and Basic Maintenance	Private Branch Exchange
Pearisburg	2,054		1																					
R. Ins Brammer	2,082		1																					
Highland Co	2,500	1		$2,865			1				1													
Clifton Forge	4,500		1																					
Rappahannock C	7,000		1																					
Cumberland Co	8,000	1		$1,125				1			1													
Richmond Co	8,700		1																					
Mathews	9,100		1																					
Essex	9,300	1		$1,330				1			1													
Middlesex Co	9,300	1		$2,000			1				1													
Mary Riley Styles	9,800	1		$21,441		1					1													1
James L. Hamner	10,000		1																					
Lancaster Co	11,300	1		$3,818				1			1		1											
Poquoson	11,300	1		$5,598		1					1													
Northumberland	11,400	1		$4,055				1			1	1	1			1	1						1	
Charlotte Co	12,000	1		$1,283				1			1													
Madison Co., Inc	12,400	1		$100			1				1													
J. Robert Jamers	13,000		1																					
Nottoway Co	15,400	1		$1,229					1				1											
Radford	15,400		1																					
L. E. Smoot	16,100		1																					
Colonial Heights	16,500		1																					
Fluvanna Co	16,700	1		$800			1				1													
Bristol	17,300	1		$16,072					1	1	1				1									
Heritage	18,800	1		$1,520			1				1													
Waynesboro	18,900	1		$2,976				1			1	1												
Charles P. Jones	19,900		1																					
Powhatan Co	20,000		1																					
Caroline, Inc	21,300		1																					
Orange Co	24,100	1		$6,796			1				1	1												
Staunton	24,100	1		$1,848				1			1													
Salem	24,600		1																					
Botetourt Co	28,300		1																					
Russell Co	29,100	1		$4,200				1							1									
Buchanan Co	29,500	1		$13,209					1		1		1		1					1		1		
Samuels	29,500		1																					

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1998 Survey of Public Access to the Internet in Virginia Public Libraries

				$ Amt				60	70 %	80 %	90 %	Basic Phone	Leased Data Circuits	T-1, 56kbs, ISDN Lines	Dial-up Internet Access	Direct Internet Connections	Wireless Connections	Telecommunications Wiring	Routers	Switches	Hubs	Network Servers	Campus Networking	Internet Training	Private Branch Exchange
Lonesome Pine	108,200		1																										
Pamunkey	112,200	1		$49,269					1			1	1		1		1												
Alexandria	115,000		1																										
Rockingham	120,200	1		$20,755					1			1		1	1														
Loudoun Co	125,500	1					1							1				1											
Hampton	137,700	1		$36,220					1			1					1	1											
Jeff -Madison	167,000	1		$48,191					1			1	1	1	1														
Newport News	177,500	1		$22,160					1			1	1	1	1														
Arlington	180,600	1		$90,214					1			1		1			1	1	1	1	1	1					1		
Chesapeake	188,400	1		$42,000	1									1			1												
Richmond	194,100	1		$9,600						1		1		1	1		1	1											
Cen. Rappahann	195,000	1		$149,477					1			1	1	1			1												
Norfolk	231,900	1		$85,860						1							1										1		
Henrico Co	238,900	1		$353,408				1					1				1		1	1	1						1		
Chesterfield Co	243,000	1		$258,318				1				1		1			1	1	1	1	1						1		
Prince William	288,000	1		$62,089			1					1	1	1			1										1		
Virginia Beach	419,200	1		$66,696				1				1		1										1					
Fairfax Co	932,000	1		$443,421				1				1	1	1				1	1	1	1	1					1		1
													Leased Data Circuits	T-1, 56kbs, ISDN lines	Dial-up Internet Access	Direct Internet Connections				Switches	Hubs		Campus Networking			
TOTALS	6,665,236	64	26	$2,539,079	1	0	8	9	19	15	9	1	57	15	30	14	16	1	12	13	6	11	11	6	14	3			

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Ratio of Public Library Public Access Workstations to Population in Legal Service Area

public libraries' legal services

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1998 Ratio of Public Library Public Access Workstations to Number of Registered Borrowers

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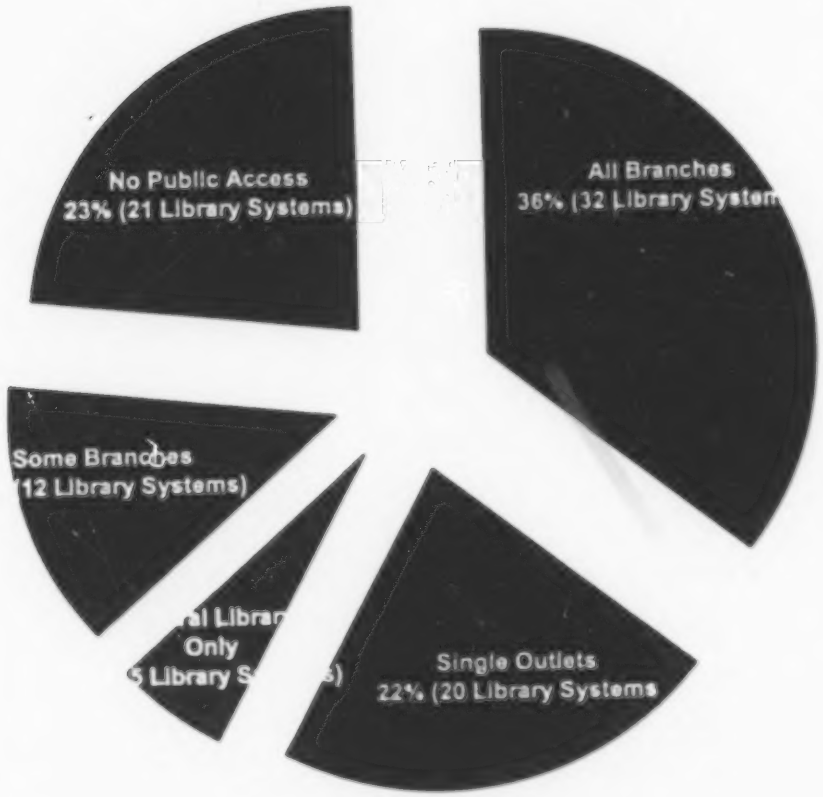
Internet Public Access



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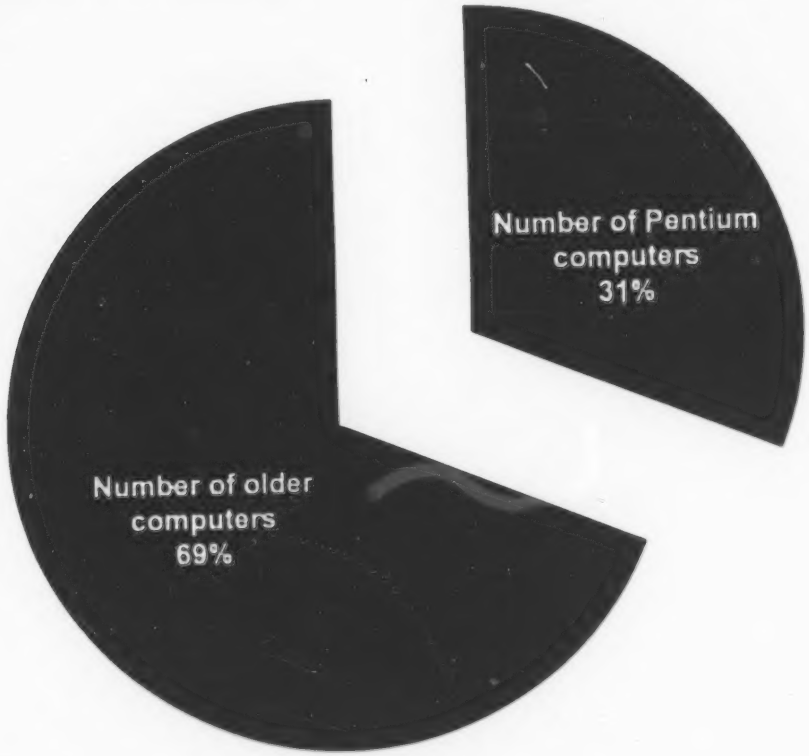
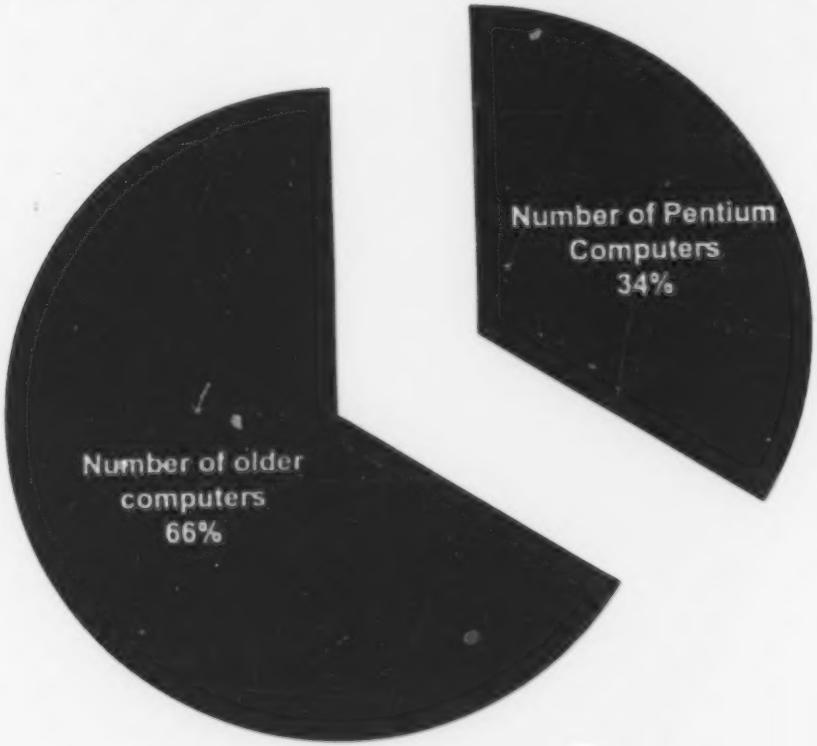
Public Internet Computers at Main or Central Libraries

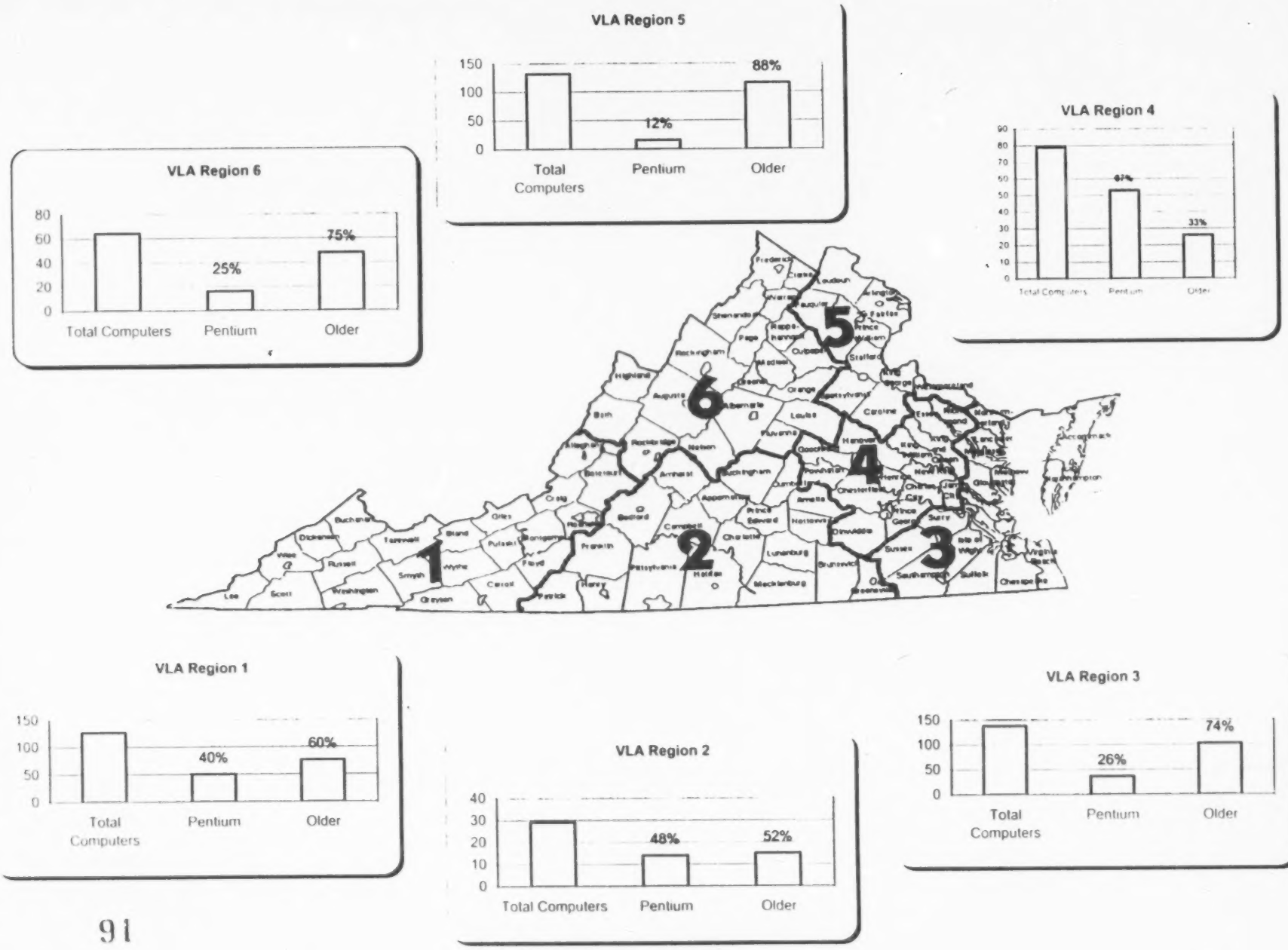


2.98 computers per Main or Central Library

Public Internet Computers in Branch Libraries



1.33 computers per branch



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Appendix 2

The 1998 Lynch Report

Dr. Clifford Lynch
Executive Director
Coalition for Networked Information

A Review of LVA Networking Plans and Strategies

Clifford Lynch

September 21, 1998
Revised October 30, 1998

Introduction

In August-September 1998 I was retained to review the LVA plans, strategies, and directions for networking in the Commonwealth of Virginia, with particular focus on the draft document "Infopowering the Commonwealth" which LVA had been developing as a comprehensive strategic technology plan for presentation to the Virginia library community and to the Joint Commission on Technology and Science and the General Assembly later in 1998. This review included a site visit to LVA in August 1998 and an opportunity to meet with the Technology Plan Committee to discuss the August 20 1998 draft of the document plus an additional review of the subsequent August 31,1998 and October 25 revisions of "Infopowering the Commonwealth", which incorporates the vast majority of my suggestions in those August 1998 meetings with LVA and the Technology Plan Committee. I believe that the current draft of this report provides a strong, well-thought-out and exciting roadmap towards broad citizen access to electronic information in the Commonwealth over the next few years, as well as a clear perspective on the relationship between network connectivity and information access, and a pragmatic approach to the difficult and controversial acceptable use policy issues that have emerged as public libraries provide access to electronic information resources.

The review and strategy planning in August-September 1998 built on many of the directions articulated in my earlier 1994 report, "A Report to the Board of the Virginia State Library and Archives on Strategic Planning Issues in Library Automation and Networking". Many of the recommendations of that report -- for example, the phase-out of CAVALIR online as a shared cataloging utility; the development of a LVA-led digital library program to make the unique holdings of LVA and other libraries in the Commonwealth available to citizens in digital

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form; and the positioning of LVA as a technology leadership organization supporting the public libraries of the Commonwealth -- have already been implemented. I particularly want to note here the really superb, dramatic work that LVA has done in the area of creating a digital library of unique holdings; this program is creating a world-class network-accessible collection of the treasures of LVA and other Virginia libraries. Progress has been made on other recommendations, such as the repositioning of LVA and VLIN away from a role as a provider of internet connectivity for Virginia public libraries in cases where commercial offerings are available. Other issues in my 1994 report, such as the role of LVA in providing commercial electronic content for public libraries in Virginia, have not yet been well explored but now, with all of the progress that has take place on other priorities and also with the maturing of the commercial marketplace, are moving to center stage as policy issues.

My purpose in this document is to summarize and amplify my recommendations for the role of LVA in networking and information access for the public libraries of the Commonwealth; as I have already indicated, these are strongly reflected in the October 1998 draft of "Infopowering the Commonwealth". It is divided into two sections; the first deals with network connectivity issues, and the second with issues related to digital content that will be accessible through the network.

Networking and Internet Connectivity

Clearly, internet connectivity for the libraries of the Commonwealth is an essential prerequisite for any electronic information access strategy. However, it's important to recognize that there are several different kinds of connectivity which serve different purposes, and that different library systems within the Commonwealth have very different capabilities to effectively exploit the various connectivity options available.

It is also vital to recognize that the context for network connectivity planning is changing as the commercial offerings for internet access evolve, and particularly in light of the fact that these offerings are steadily increasing the number of citizens who enjoy direct access to the internet, either through personal (consumer) network connectivity (dial-up Internet service provider accounts, cable TV based modem services, etc.), or through the growth of connectivity to schools, libraries or to their workplace, or, in some cases, connectivity via dialup to facilities provided by the local public library (though I suspect

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that this will be a diminishing factor). This sector of the citizenry will be able to make direct use of electronic information resources that are offered throughout the Commonwealth, whether under the auspices of LVA or local library systems, and, as this sector grows, it will ultimately reduce pressure on libraries to provide ever-growing numbers of public access workstations within library buildings -- though it will increase demands for public libraries to provide help in learning to use and evaluate and select resources.

There are several different types of network connectivity that can be offered to libraries. Today, VLIN offers character-mode dialup access that is oriented to library staff, providing access to a range of electronic databases in support of reference services, as well as email and other routine network services. The character based access cannot support graphically-oriented web services; in addition, this access is aimed at staff (including staff-mediated public reference services) rather than at unmediated public access to both commercial and free information resources on the net. The current VLIN service is useable by even relatively old, under-powered computers.

Commercial internet service providers (ISPs) offer consumer-oriented dial up access to the internet, typically at a flat rate of about $20/month/customer; this access is based on technologies like PPP which support access to graphical web services. This type of dialup technology can also be used by library staff or to support modest levels of use on small numbers of public access library workstations (for example, in a small rural library, it is a very reasonable way to provide a few public access workstations). Reasonably modern, high-performance computer workstations are needed to make effective use of such a connection. Note that ISP dial up access is not available from all locations in the Commonwealth today for the cost of a local call.

Libraries or library systems with a sophisticated local networking infrastructure can make use of direct network connectivity via high-speed leased lines or services such as ISDN; this type of connection can support large numbers of staff and public access workstations. It also potentially positions the library to serve as an information provider to users anywhere on the Internet if the library is prepared to run a computer functioning as a web server (although this requires additional hardware investment, plus staff support and expertise for operations). It is important to recognize that while some of the larger public library systems have already made the substantial investment -- in wiring infrastructure, hardware, and staff -- to install and operate such a local networking system, some of the smaller rural libraries and

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library systems are unlikely to be in a position to do so in the near future. Dropping a high speed leased line to a small rural library doesn't accomplish much; substantial hardware and wiring investment, and the expertise to run the system once installed, are all needed to convert such a line into meaningful and useable network connectivity. Thus we have a situation where the connectivity needs, and the ability to exploit network connectivity are becoming more diverse within the Commonwealth. An effective connectivity strategy must explicitly recognize this diversity; the situation is not the same at all public libraries and public library systems will evolve at different rates and in different directions, driven by local community priorities.

I believe that the goals of a connectivity program for Virginia public libraries should be these:

1. All staff workstations should have access to graphically based network services; every library, even the smallest, should have at least one such workstation, and ideally one for each staff member working concurrently (as appropriate, given the nature of his or her work).

2. All libraries, even the smallest, should be able to offer graphically based access to network information resources through at least one public access workstation if they wish to do so. It is very difficult, for large libraries, to project the optimal goal for the number of public access workstations, and this will change as the sector of the citizenry that has access to the net via other routes grows, as discussed above.

3. As libraries and library systems invest in local infrastructure, they should be able to link this infrastructure to the worldwide internet with sufficient bandwidth to support their installed base of staff and public access workstations.

4. All libraries and library systems in Virginia should be able to have an electronic presence on the net via Web pages, though these need not (and probably often should not) be hosted on local web servers.

I believe that the plan articulated in the current draft of "Infopowering the Commonwealth" will make progress towards all of these objectives. It helps to upgrade the installed base of workstations to support graphical access; it provides connectivity support both for small libraries that do not have the infrastructure to exploit leased line connections, while also providing assistance to those larger systems that have or will be placing the requisite infrastructure in place. LVA

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will position itself to host web pages for those libraries not in a position to operate their own web servers today or in the near future.

A few additional comments should be made. I believe that LVA should continue to seek to move away from its current set of connectivity and routine network services (particularly on email) on VLIN. Commercial ISPs offer a more sophisticated email service and graphically oriented connectivity.

VLIN, in terms of network connectivity, needs to position itself as an ISP of last resort for unserved or underserved areas of the Commonwealth, and to convert its connectivity offerings for those areas to graphically-enabled services (i.e. PPP-based dialup and POP or IMAP based mail service using one of many commercially available graphical clients for the workstation) similar to the offering currently available from commercial providers.

In some situations, it may be less expensive (and less staff-intensive for LVA) to simply provide some subsidy for rural libraries to make long-distance calls to a commercial ISP rather than to continue to offer access to a VLIN 800 number and VLIN services, or to place terminal servers within local call range of these rural libraries (though there will continue to be situations, particularly when VLIN can share facilities with other agencies, where this will continue to be a cost-effective solution). Continual analysis and review of the local situation for libraries not served by local-call-accessible commercial ISPs will be necessary.

Planning, implementing and operating local infrastructure (inter-branch links and in-building local area networks) is a complex effort requiring considerable expertise. LVA can play a very important leadership role as a consultant to Virginia public library systems as they move beyond dial-up access to the network, helping with network design and procurement, security policies, and a host of other issues. It is essential that make the commitment to staffing this function adequately, and investment in this area should provide very high leverage over time. Note that the E-rate program also recognizes the need for local networking infrastructure as well as internet connectivity for libraries.

While LVA should certainly continue to monitor developments in NETWORK.VIRGINIA and represent the interests of the library community in this area (as well as helping to communicate these developments to the library community), it should be clear from the

analysis above that the capacity -- and the costs -- involved in connections to NETWORK.VIRGINIA as the offering is currently structured go well beyond either the needs or the means of all but the largest and most sophisticated public library systems. NETWORK.VIRGINIA is a very important program for the higher education and research sectors in Virginia for the near term; in the longer term it may also have increasing relevance to the broader library community as prices drop .

Finally, while I suggest that VLIN move away from providing commodity services such as email to library staff throughout the Commonwealth, I believe that there are a series of important higher-level services which are essential to the function of Virginia libraries and librarians as a resource-sharing community, such as managing electronic mailing lists and directories of librarians and libraries which need to be continued. These form a logical complement to web-hosting services for public libraries throughout the Commonwealth, and to the content-oriented services that will be discussed in the next section.

Electronic Content for the Citizens of the Commonwealth

LVA, through its Digital Library program, has done a tremendous job of opening up the unique historical collections that it holds in trust for the citizens of the Commonwealth, and is now expanding this work both to incorporate additional LVA collections and to reach beyond LVA proper, collaborating with other Virginia libraries to make a broader range of content available. I would note that as the range of digitization projects grows -- and as the success of the projects creates pressure for even more projects -- it will probably be necessary to move to a somewhat more formal means of establishing priorities for the ongoing program jointly with the statewide library community. I believe that work on Virginia-based digital content is going well, although I think that a focused effort to also facilitate greater access to state and local government information in collaboration with the appropriate agencies is an essential complement to current programs; in many cases, this is important information and access to it is vital for citizens in all walks of life.

However, the current Digital Library work is only part of the broader electronic information program that is needed. There are two other major components, both of which are directly addressed by "Infopowering the Commonwealth".

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The first is a broad-based, collaborative effort among Virginia libraries to identify and organize appropriate, authoritative networked information resources to serve specific user communities and information needs -- including the needs of children -- and to make it easy for users to locate and navigate among these resources. Such a program is identified in "Infopowering the Commonwealth"; it will be important to recognize that building and maintaining such a resource will require staff time, both at LVA and at the local level (to the extent that local libraries or library systems are prepared to contribute, and also to the extent that they wish to customize or extend the resource.)

The second is the negotiation of statewide licenses for end-user (as opposed to library staff) access to commercial databases of information such as encyclopedia, periodicals and journals. This is tremendously important and will have a huge impact on citizens throughout the Commonwealth. I want to note, however, that you are embarking on a very complex undertaking here, and that planning to date has just begun to fully explore the complexities; you are at the beginning of a long and exciting road. While an initial core offering consisting of a general periodicals database, an encyclopedia and a database of resources for children certainly seems like the right place to start, I believe you will rapidly encounter demand for additional resources in areas such as consumer health, legislative and state regulatory information, small business, jobs, job training and employment, and personal financial data, among others. Some of these information resources will be commercially available offerings; others will be information resources created by state and local agencies. You will need to think carefully about governance arrangements to select, review and prioritize acquisitions; there are a huge array of factors that need to be considered, including database quality and timeliness, support for those with disabilities, relationships to existing public library print holdings, and the like. The actual negotiation and procurement will be complex, and require a good deal of analysis and expertise. You should, I believe, also give some thought to negotiating licenses to additional supplemental resources which individual library systems can opt into or out of by contributing some funding towards the licenses -- by using the leverage of negotiating on a state-wide basis you may be able to bring the prices down within the reach of more library systems. Some of the resources available through VIVA will be of value beyond the academic community, though they are probably not the top priority for the public libraries, and joint licensing initiatives should be explored; they may result in savings for the VIVA members as well due to volume considerations.

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Providing access to this rich array of resources will be a partnership between LVA and every public library in the state; this means that a program for training librarians not only to use the databases, but to teach and assist the public in using the databases will be needed. And, finally, there are difficult technical issues involving authentication and access management that will need to be carefully analyzed, particularly as you offer citizens connecting to the internet from home, school and workplace access to these resources.

In the area of bibliographic resource control, the retrospective conversion program for bibliographic records called for in the plan is clearly necessary as a prelude to more effective resource sharing, and the funding requested should solve the retrospective problem. However, it will also be important to make sure that a program is in place to ensure that all libraries continue to create and maintain accurate electronic records for their bibliographic holdings on an ongoing basis so that a future retrospective "clean-up" operation is not required.

"Infopowering" in the Broader Context

The current document articulates a three-year plan to massively enhance information access for the citizens of the Commonwealth. It is important to recognize that this plan is being developed in a very volatile technology, economic and policy environment; in the context of gradual but massive shifts in direct citizen access to the Internet and to information technology; in a world where the practices and economics of publishing are changing profoundly; and against a backdrop of evolving citizen expectations.

The current plan does not represent a conclusion, but rather a roadmap for the achievement of a series of important milestones. While a significant expansion of internet access within libraries is essential, over the next decade use outside the libraries will grow enormously, and I believe that the priority will shift more and more from connectivity to content availability. The information resources specifically identified in "Infopowering the Commonwealth" need to be viewed as a well-thought-out, high-priority starting portfolio, rather than a comprehensive definition of what is needed by the residents of the Commonwealth. Libraries will continue to play a central role in facilitating information access for the Commonwealth, but the specifics of that role will change over time; there will be less emphasis on the library as a place to obtain network connectivity, and much more on

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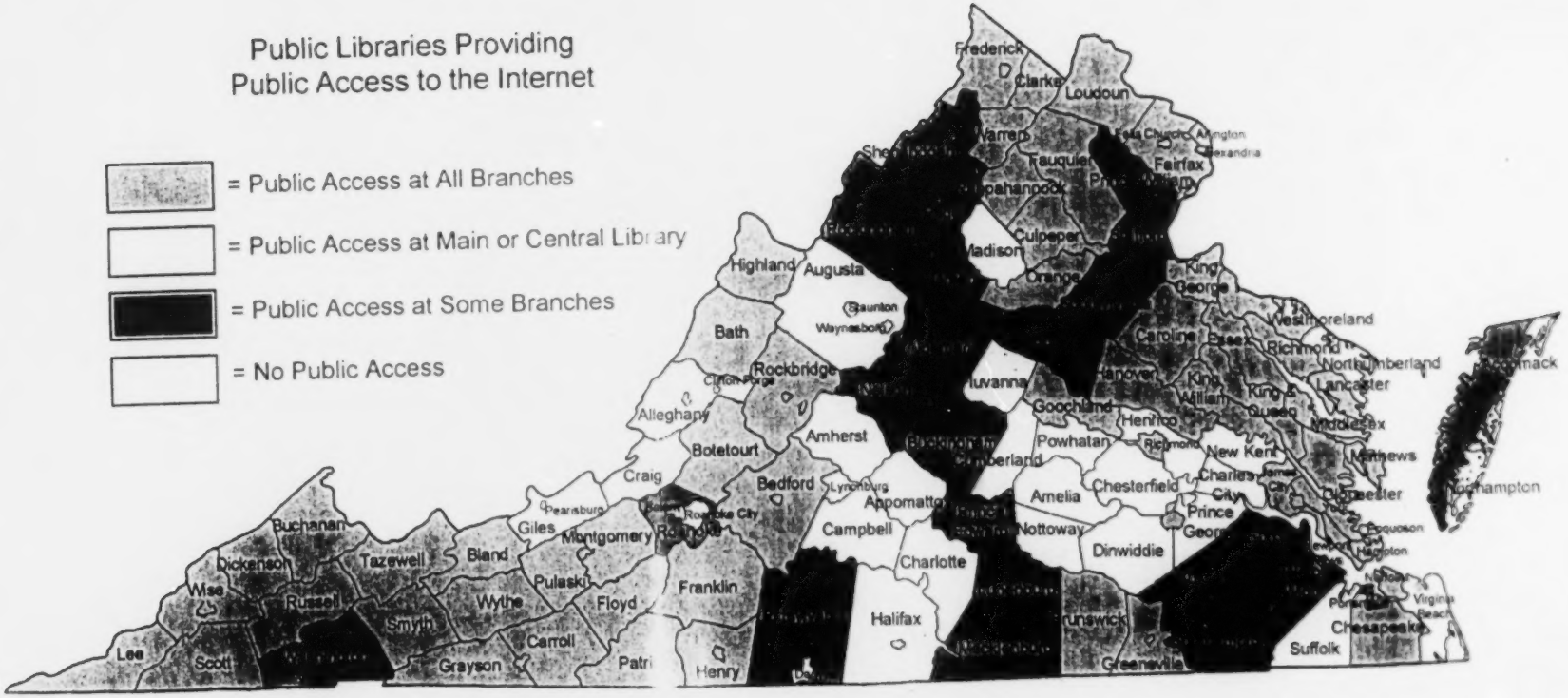
the library as a source of education and guidance in network use, on the role of the library as a selector of high-quality information, and on the role of the library as an agency of the citizenry in negotiating, licensing, and funding access to important information resources.

In this context, I believe that scoping the plan at three years, and building in an explicit evaluation and assessment activity in year three (Recommendation Five) is particularly important. I would urge that this evaluation activity not only consider the progress that has been made by the libraries of Virginia, but also a full consideration of the environmental factors that shape the planning process.

Appendix 3

Map and Charts



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Appendix 4

Internet Costs

Figure 3 Internet connectivity: a snapshot of representative hurdles and costs (prices from the New York region, February, 1998)

Equipment	Specification	Unit ($)	One-time ($)	Recurring ($)	Notes
1. System/server hardware					
Multimedia workstations	P266 64mb RAM w/ NIC	2 500			Replace every 18-36 mo.
Servers	P300 128mb RAM	4 200			Still need backup unit
Printers	HP LaserJet 5M 12ppm	1 800			Still need paper, toner
Scanners	Microtek Scanmaker	600			Not archival quality
Accessibility hardware	Keybd swivel, dial-in tools	2 000			In-house and remote access
2. Telecommunication lines					
2.1 Dial-up (measured in bits per second)					
28.8 modem	Flat-rate		50	240 annual	
56k modem	Flat-rate		50	240 annual	
64k (1-channel) ISDN	100 hours		35	360 annual	
128k (2-channel) ISDN	100 hours		35	720 annual	
Cable service (10 million bps)	Flat-rate		50	480 annual	
2.2 Leased line (measured in bits per second)					
56k			500	6 000	
64k (1-channel) ISDN			750	6 000	
128k (2-channel) ISDN			750	7 200	
Fractional T1 (< 1.5 million)					
T1 (1.5 million)			1 000	9 000	Vary wildly by region
T3 (45 million)					
3. Communication hardware/fees					
Router & CSU/DSU	Cisco 1005, Motorola DA56	1 250			Rock-bottom
Modems	USR 56k	50			
Telephone lines	Unlimited dial-out		200	300 annual	
LAN hubs	3Com 12/100Tx	533			
4. Software					
Operating systems	NT server + 10 clients	1 000			
OPAC gateway					
Navigation	Telnet and browser	10			Assumes free browser
Webpage development	HomeSite 3.0 single lic.	80			
Website management	O'reilly Website 2.1	800			
Accessibility software	Enlargers, input readers	2 000			89% of libraries spend here
5. Facilities upgrades/maintenance					
Air conditioning					
Cabling, wiring					
Building renovation		Age and adaptability of facility play key roles			
Office equipment					
6. Electronic content/resource services					
Online databases (e.g. FirstSearch)	Per search	0.60 and up			Easily tens of thousands
Virtual Web hosting	Virtual, 100mb space		100	500/annual	Includes domain name
7. Grant/program development					Hours or months, depending
8. Staff (training, Web development, reference services, etc.)					Never enough
9. No-cost items					Never free

Source: Adapted from Bertot *et al.* 1997

McClure, Charles R. Internet Costs and Cost Models for Public Libraries: Final Report, June 1995. Washington, D. C., U. S. National Commission on Libraries and Information Science, [1995]

Bertot, John Carlo. The 1997 National Survey of U. S. Public Libraries and the Internet: Final Report. Washington, D. C., American Library Association Office of Information Technology policy. 1997.

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Appendix 5

Content Costs

APPENDIX 5
CONTENT COSTS – Recommendation #2, Strategy #2

The BASIC content package included in the Electronic Resource Library is: a periodical index of approximately 1200 periodicals with full text for three to five years, some basic reference books such as an almanac, one or more encyclopedias, selected major newspapers with at least 90 days full text coverage and children's materials. Health and business (including jobs) would be two subjects that must be included in the BASIC content package. This content would be available in the local library and remotely (dial in from a remote source through PC and modem). Other resources, perhaps more narrowly focused, may be added in subsequent years, particularly in partnership with other Commonwealth institutions and organizations. The costs detailed below reflect this BASIC content package which was considered as minimum for an effective Electronic Resource Library.

I. Approach one – Costs based on comparable packages in other states.

- Michigan and Ohio maintain electronic information packages for statewide use. Ohio (population 11.1 M) through OPLIN spends $2M annually for a basic package very similar to the desired Virginia package. The $2M does not include a health database or an encyclopedia for children. The health data base is paid for through other funds. Michigan (population 9.5 M) has just purchased a single package that addresses most of our needs with the exception of children and health for $2 M annually.
- Each of these states has a larger population than Virginia (6.6 M). Since the potential users are based on population, the size of the population may effect the total price. However, it is clear that the cost is not totally based on population served. Vendors do not disclose their cost formulas for obvious reasons.
- Each of these states conduct competitive bidding. Each of the packages they acquire is somewhat customized to their needs. Each of these licenses is a site license with unlimited users. Remote users access the resources through the local public library so that user validation against the libraries' patron database can occur.

II. Approach two – Costs of individual components.

- The cost of a brand name major package of 60 databases including periodical indexing, full text, selected major newspapers, an encyclopedia and some reference books suitable for homework is $1.5 M (vendor does not wished to be named – nor is this a formal bid). This cost is based on the population of Virginia. This package does not include material suitable for elementary aged children nor does it include a basic consumer health package. It does include remote access.
- An encyclopedia suitable for children, available under the same conditions, would cost close to $100,000.
- A health database (periodicals and reference books) would cost approximately $300,000.

Conclusion: From the data collected the projected first year costs of $2 M for content for the Electronic Resource Library seems appropriate. Subsequent costs can be calculated more clearly after the basic package is in place.

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Appendix 6

Library of Virginia
Staff Support Costs

APPENDIX 6 LIBRARY DEVELOPMENT SERVICES

SCHEDULE FY 2000

Step 11 has been used in each case These positions are not entry level, therefore it is reasonable to project Step 11 as necessary to attract qualified applicants

FY 2000 TOTAL SALARY AND BENEFITS

PRIORITY ORDER LISTING

FUNCTIONAL ACTIVITY	STATE CLASSIFICATION TITLE	# POSITIONS REQUIRED	FUND	GRADE	TOTAL BENEFITS (11 86%) 1111	(7 65%) 1112	(0%) 1114	$3 212 1115	(68%) 1116	SALARY 1123	FUND 0100 TOTAL PAY
LIBRARY DEVELOPMENT SERVICES											
Classified	Programmer/Analyst	1	0100	12	4 818	3 108	0	3 213	276	40 621	52 036
	Computer Network Support Technician Senior	1	0100	10	4 031	2 600	0	3 213	231	33 991	44 066
	Computer Network Support Technician	1	0100	9	3 688	2 379	0	3 213	211	31 093	40 584
	Programmer Support Technician	1	0100	6	2 823	1 821	0	3 213	162	23 800	31 819
GRAND TOTAL		4			15 360	9 908	0	12 852	880	129 505	168 505
			FUND 0100		15 360	9 908	0	12 852	880	129 505	168 505

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